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BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;
WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., G.C.S.I.,
F.R.S., F.L.S., ETC.,
D.C.L. OXON., LL.D. CANTAB., MEMBER OF THE INSTITUTE OF FRANCE.

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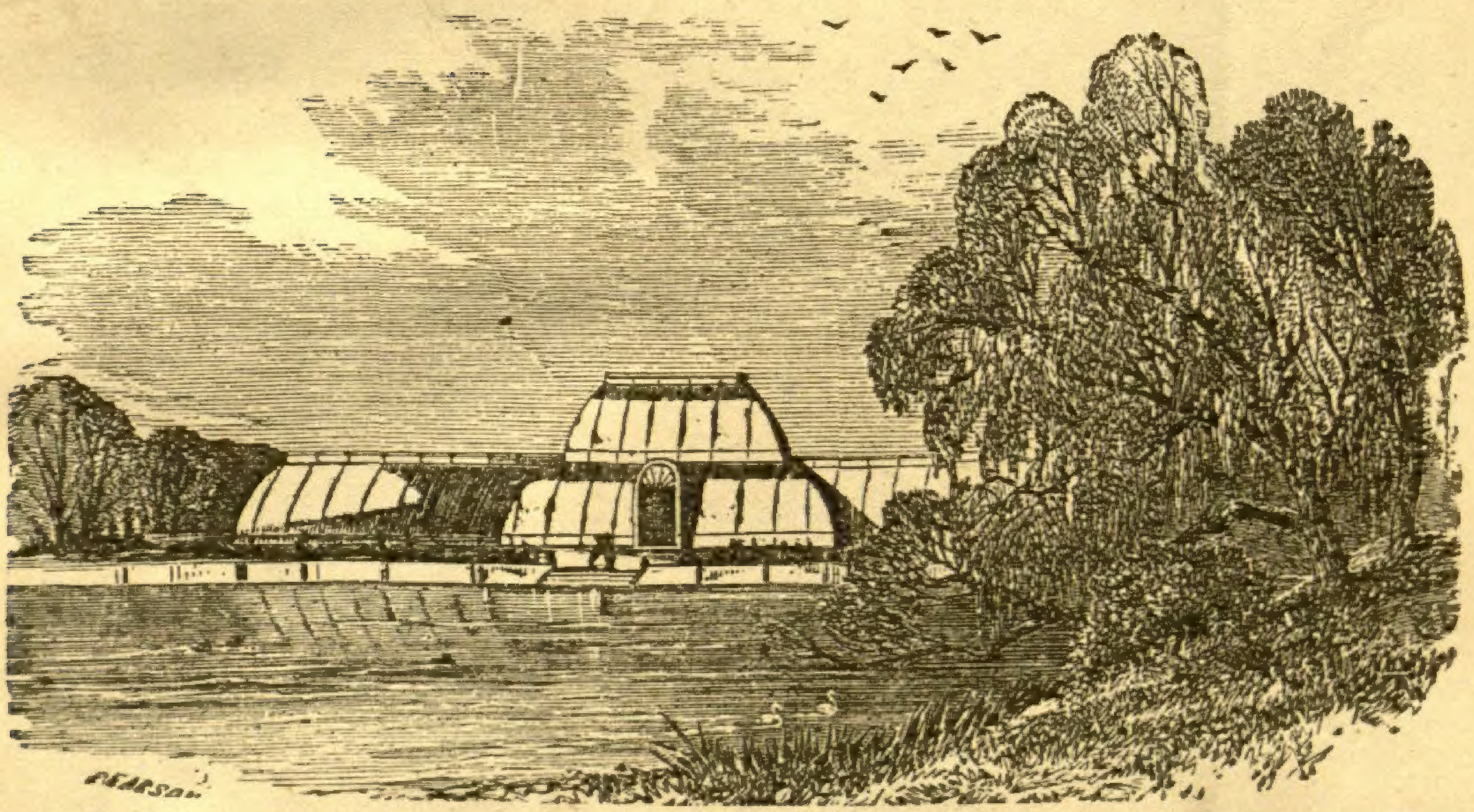

> "He spake of plants that hourly change
> Their blossoms through a boundless range
> Of intermingling hues;
> With budding, fading, faded flowers,
> They stand the wonder of the bowers
> From morn to evening dews."
> WORDSWORTH.

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Mo. Bot. Garden
1905

SHOUT
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IT

To

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Late of the Chinese Imperial Maritime Customs.

MY DEAR MR. HENRY,

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Very sincerely yours,

JOS. D. HOOKER.

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Late Director of the Royal Botanic Gardens of Kew.

Nature and Art to adorn the page combine,
And flowers exotic grace our northern clime.

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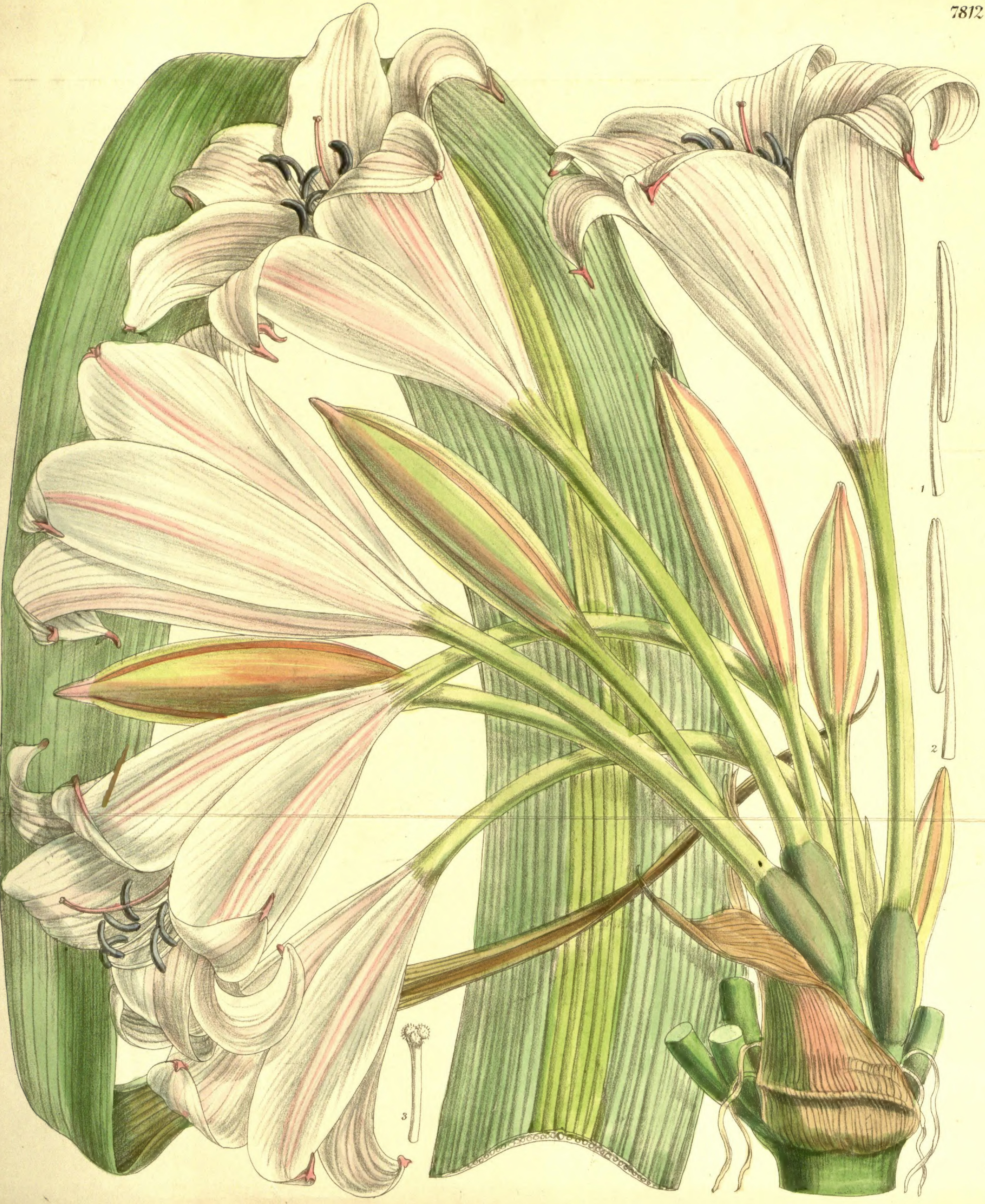

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Tab. 7812.

CRINUM Johnstoni.

Native of British Central Africa.

Nat. Ord. Amaryllideæ.—Tribe Amarylleæ.

Genus Crinum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 726.)

Crinum (Codonocrinum) *Johnstoni*; bulbo globoso magnitudine mediocri collo haud producto, foliis circiter 20 viridibus apicem versus longe attenuatis, exterioribus ensiformibus 5–6-pedalibus, interioribus linearibus, scapo modice valido elongato, umbellis multifloris, pedicellis brevibus, spathæ valvis lanceolato-deltoideis, perianthii tubo leviter curvato 4 poll. longo, limbo tubo breviori, segmentis ovatis vel oblongis acutis dorso leviter rubro tinctis, genitalibus declinatis limbo vix brevioribus.

A number of bulbs of this new *Crinum* were sent from Mount Zomba, forty miles north of Blantyre, in British Central Africa, in January, 1899, to the Royal Gardens, Kew, by Mr. McClonnie, chief of the forest department in that Colony. It is now clear that Tropical Africa is the head-quarters of the genus, as it has yielded nearly forty species. We do not know from what height on Mount Zomba the bulbs came, but the mountain reaches an altitude of five thousand one hundred and thirty-five feet. The present plant is intermediate between the Tropical Asian *C. latifolium*, which it resembles in the flowers, and the Cape *C. longifolium*, Thunb., which it resembles in its long narrow leaves attenuated very gradually to the point. In *C. Johnstoni*, however, the leaves are bright green, whilst in *C. longifolium* they are glaucous. It has flowered freely in the Succulent House at Kew, but has not been tried in the open air. The name it bears is commemorative of the great services rendered to civilization in Tropical Africa by Sir Henry Hamilton Johnston, ~~K.C.B.~~, late (1891-7) H.M. Commissioner and Consul-General for territories north of the Zambesi, subsequently Administrator of the Uganda Protectorate.

Descr.—*Bulb* globose, three or four inches in diameter, without any produced neck. *Leaves* about twenty to a bulb, bright green, narrowed gradually to a long point,

January 1st, 1902.

the outer ensiform, five or six feet long by two or two and a half inches broad low down, the inner linear. *Peduncle* moderately stout, about two feet long. *Flowers* many in an umbel; pedicels about an inch long; spathe-valves two, lanceolate-deltoid, two or three inches long. *Perianth-tube* slightly curved, tinged with green, four inches long; limb shorter than the tube, its segments ovate or oblong, acute, slightly tinged with pink on the back. *Stamens* declinate, nearly as long as the limb; anthers linear, a third of an inch long. *Style* just overtopping the anthers.—*J. G. Baker.*

Fig. 1, front view of anther; 2, back view of anther; 3, apex of style and stigma:—*all enlarged.*

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TAB. 7813.

ANGRÆCUM EICHLERIANUM.

Native of Calabar.

Nat. Ord. ORCHIDEÆ.—Tribe VANDEÆ.

Genus ANGRÆCUM, *Thou.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 583.)

ANGRÆCUM (Euangræcum) *Eichlerianum*; scandens, caule elato robusto compresso ½ poll. lato ancipiti, radicibus longissimis, foliis sessilibus distichis 4–5 poll. longis oblongis apice obtusis inæqualiter emarginatis crasse coriaceis supra saturate viridibus subtus pallidis, vaginis 1–1½ poll. longis, pedunculis decurvis foliis suboppositis gracilibus viridibus 3–4 poll. longis 1–3-floris ima basi vaginis paucis brevibus arcte amplectentibus instructis, bracteis parvis oblongis coriaceis pedicellos arcte vaginantibus, pedicellis cum ovariis pollicaribus viridibus, floribus amplis, sepalis fere 2 poll. longis anguste lineari-oblongis obtusis strictis enerviis flavo-viridibus, petalis sepalis consimilibus et concoloribus sed brevioribus, labello amplo subreniformi-quadrato late cuspidato albo lateribus recurvis disco flavo-viridi basin versus bicarinato, calcare sepalis breviore saturate viridi ultra basin infundibularem constricto genuflexo dein elongato angusto fusiforme subacuto.

A. Eichlerianum, *Kränzl. in Berl. Gart. Zeit.* vol. i. (1882) p. 434, fig. 102; *in Mitth. Deutsch. Schutz. Geb.* vol. ii. (1889) 159, *et in Reichb. f. Xen. Orchid.* vol. iii. p. 128, t. 273, fig. 2. *Rolfe in This. Dyer, Fl. Trop. Afr.* vol. vii. p. 143.

The localities given for *A. Eichlerianum* in the "Flora of Tropical Africa" are South Cameroons region, and near Kapamba, in the gorge of the Loango River, both in the Gulf of Guinea. The first of these localities is not far distant from Old Calabar in Nigeria, whence the specimen here figured was sent to the Royal Gardens in 1900 by Mr. J. H. Holland, Superintendent of the Botanic Gardens at that town. It flowered in a tropical house in June, and kept in flower till September. In the form and colour of the flower it closely resembles *A. Gyriamæ*, Rendle, but in habit, stature, foliage, and the form of the spur, these species are very unlike.

Descr.—*Stem* elongate, stout, compressed, obtusely two-edged, leafy, emitting roots a foot long. *Leaves* alternate, sessile, distichous, four to five inches long, oblong, obtuse or rounded, and emarginate at the tip, thickly coriaceous, deep green above; sheaths an inch to an inch and a half

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long. *Peduncles* leaf-opposed, slender, decurved, three to four inches long, naked, except a few short, tubular, truncate sheaths at the base, one- to three-flowered. *Bracts* oblong, sheathing, one-half to three-fourths of an inch long, coriaceous, green. *Pedicel* with ovary an inch and a half long. *Flowers* three and a half inches broad from the tip of the dorsal sepal to that of the lip. *Sepals* linear, spreading, oblong, convex, pale green, dorsal two inches long, lateral rather longer. *Petals* rather shorter than the sepals, linear-lanceolate, acute, pale green. *Lip* sub-reniformly quadrate, two inches in diameter when spread out, abruptly narrowed at the tip into a broad cusp, white, with a yellow green disk, and two short keels near the base, margins strongly recurved on the basal half; spur shorter than the sepals, very dark green, campanulate at the base, then constricted, geniculate, and ending in narrowly fusiform, acute dagger. *Column* very short, its sides dilated into two parallel ovate-lanceolate auricles. —*J. D. H.*

Fig. 1, base of lip and column; 2, anther; 3 and 4, pollinia:—*all enlarged.*

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TAB. 7814.

BAUHINIA YUNNANENSIS.

Native of China.

Nat. Ord. LEGUMINOSÆ.—Tribe BAUHINIEÆ.

Genus BAUHINIA, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 575.)

BAUHINIA (Phanera) *yunnanensis*; **frutex scandens, cirrhifera, glaberrima, glauca, ramis ramulisque gracilibus teretibus, cirrhis complanatis, foliis parvis coriaceis bipartitis basi cordatis sinu angusto acuto, segmentis oblique ellipticis 1½ poll. longis basi et apice rotundatis 3–4 nerviis pallide viridibus, petiolo gracili, racemis oppositifoliis elongatis laxe multifloris pendulis, pedicellis 2–3-pollicaribus, bracteis minutis caducis, calycis tubo ¼–⅓ poll. longo cylindraceo, limbo tubo subæquilongo bipartito segmentis cymbiformibus, petalis spathulatis ad ¾ poll. longis pallide roseis apicibus lanuginosis 3 superioribus sanguineo-striatis, staminibus 3 perfectis petalis paullo longioribus, filamentis arcuatis kermesinis, antheris lineari-oblongis ciliatis, imperfectis multo brevioribus ovario glabro stipitato, legumine anguste lineari 6 poll. longo leviter arcuato polysperma, valvis planis rugulosis.**

B. yunnanensis, ***Franch. Pl. Delav.*** 1890, p. 190.

The subject of this plate is a very graceful greenhouse climber, a native of Western China, where it was discovered by the Abbé Delavay on wooded hills of Lokoshan, in the districts of Tapin-tze, in Yunnan; and on mountains south-west of Mengtze, in the same province, at an altitude of six thousand feet, by Dr. Henry. A plant of it in the Temperate House of the Royal Gardens, Kew, received in 1893 from the Royal Botanic Gardens of Edinbugh, flourishes and flowers freely, but the specimen here figured was sent from the Cambridge Botanical Gardens, where, Mr. Lynch informs me, it rambles over the roof of a conservatory fifteen feet above the ground, flowering in July.

Descr.—A climbing, glabrous, glaucous shrub. *Stem* and *branches* very slender, terete; tendrils flattened. *Leaves* small, coriaceous, bipartite, pale green; segments an inch and a half long, obliquely elliptic, three- to four-nerved, sinus narrow, acute, base and apex rounded; petiole an inch to an inch and a half long, slender, swollen at the base. *Racemes* terminal and leaf-opposed, pendulous, four to six inches long, many-flowered; bracts minute, cadu-

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cous; pedicels two to three inches long, slender. *Flowers* one to one and a half inches broad. *Calyx-tube* one-fourth to one-third of an inch long, cylindric, terete; limb bipartite; segments orbicular, concave, green, the anticous three-toothed. *Petals* three-fourths of an inch long, spathulate, pale pink, three upper with three streaks of carmine from the base to the middle, two lower with one median streak. *Perfect stamens* three, declinate; filaments carmine; anthers oblong, cells with ciliate margins; staminodes seven, very short; anthers imperfect, globose. *Ovary* stipitate, glabrous, linear, narrow, contracted into a stout incurved style; stigma small, capitate. *Legume* six inches long, linear, many-seeded; valves flat, rough.—*J. D. H.*

Fig. 1, calyx, stamens, and ovary, with style removed; 2 and 3, anthers; 4, imperfect stamens:—*all enlarged.*

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TAB. 7815.

SCHOMBURGKIA THOMSONIANA.

Var. MINOR.

Native of the Cayman Islands, W. Indies.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus SCHOMBURGKIA, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 534).

SCHOMBURGKIA *Thomsoniana*; pseudobulbis 2–3 poll. longis oblongis v. ovoideis compressis sulcatis vaginis brevibus late ovatis membranaceis striatis laxe tectis, foliis 2½–3-pollicaribus ellipticis obtusis crasse coriaceis pallide viridibus, scapo 10-pollicari remote vaginato, vaginis ad ½ poll. longis late ovatis appressis membranaceis albis brunneo striolatis, racemo 4–12 poll. longo simplici v. paniculatim ramoso laxe 6–∞-floro, bracteis pedicellis multo brevioribus erectis lanceolatis membranaceis, pedicellis 1–1¼ poll. longis gracilibus decurvis viridibus, ovario brevi, perianthio 2½ poll. diam., sepalis petalisque lineari-oblongis obtusis citrinis marginibus undulatis, labelli lobis lateralibus oblongo-rotundatis intus flavis roseo striolatis, terminali obcordato, ungue lato primulino, disco 5-costato, limbo dilatato 2-lobo, lobis crispato-undulatis læte rubro-purpureis, columna leviter incurva marginibus integris, anthera breviter biloba.

S. Thomsoniana, *Rchb. f. in Gard. Chron.* 1887, vol. ii. p. 38. *Veitch, Man. Orchid.* Part II., p. 102.

The beautiful Orchid here figured is, as far as hitherto known, confined in its native condition to the Cayman Islands, or rather Islets, in the Caribbean Sea. Of these islets there are two groups, nearly one hundred miles apart, situated respectively, the large or Grand Cayman, two hundred miles W.N.W., and the lesser or Cayman Brac, one hundred and forty miles N.W. of the Western point of Jamaica, of which they are dependencies. They are clothed with forest, and inhabited by Turtle-fishers.

There are two varieties of *S. Thomsoniana*, namely, *atropurpurea*, with large cream-coloured and purple flowers, the lip with a deep purple throat, and slightly recurved terminal lobe; and *minor*, with smaller canary-yellow flowers, and less purple on the throat of the lip, which has a strongly reflexed terminal lobe. Both vars. grow on the Grand Cayman, where *atropurpurea* is most abundant. Var. *minor* is confined to Cayman Brac. Our figure represents var. *minor*.

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S. Thomsoniana was sent to the Royal Gardens, Kew, by Mr. W. Fawcett, B.Sc. F.L.S., Director of Public Gardens and Plantations in Jamaica, in 1888. It flowered at Kew for the first time in June, 1901, as did another specimen simultaneously in Sir Trevor Lawrence's collection. It is named in compliment to Mr. Robert Thomson, formerly Conservator of Cinchona Plantations in Jamaica.

Descr.—*Pseudobulbs* two to three inches long, oblong or ovoid, deeply grooved, bearing a few short, broad, membranous sheaths. *Leaves* two and a half to three inches long, elliptic, obtuse, pale green. *Scape* ten inches long, with a few distant membranous white sheaths, streaked with brown. *Raceme* or panicle four to twelve inches long, loosely six- or more-flowered; bracts short, lanceolate, membranous; pedicels one to one and a half inches long, decurved, green. *Flowers* two and a half inches broad. *Sepals* and *petals* linear-oblong, obtuse, lemon-coloured, margins waved. *Lip* rather longer than the sepals, lateral lobes shortly oblong, yellow within and streaked with red; terminal lobe broadly clawed, orbicular, two-lobed, crisped and waved, bright rose-purple. *Column* slightly incurved, margins entire, tip two-lobed. *Anther* obscurely two-lobed.—*J. D. H.*

Fig. 1, front, and 2, side view of column; 3 and 4, front and back view of pollinia:—*all enlarged.*

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TAB. 7816.

HIBISCUS SCOTTI.

Native of Socotra.

Nat. Ord. MALVACEÆ.—Tribe HIBISCEÆ.

Genus HIBISCUS, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 207.)

HIBISCUS (Ketmia) *Scotti*; frutex v. arbuscula, ramis erectis ramulisque stellatim tomentosis, foliis petiolatis ellipticis ovatis subrhombeisve obtusis integris v. subtrilobis dentatis crenatisve basi cordatis cuneatis v. rotundatis palmatim 3–5-nerviis supra saturate viridibus stellato-pubescentibus subtus pallidis pilis stellatis 3-furcatis immixtis hispidis, petiolo ½–1 poll. longo, stipulis subulatis, floribus axillaribus, pedunculis validis erectis 2–3-pollicaribus 1–3-floris, bracteis caducis, involucelli bracteis 10-12 ½-pollicaribus lineari-lanceolatis stellatim hispidulis calyce cynthiformi involucello æquilongo irregulariter fisso, corollæ 2½-3½ poll. diam. saturate aureæ fundo sanguineo, lobis rotundatis, columna staminea tota antherifera apice truncata, antheris orbicularibus, stylo stigmatibusque globosis atro-sanguineis, capsula globosa v. late ovoidea, ½ poll. diam. glabra, valvis 5 lævibus, seminibus reniformibus pilosis.

H. Scotti, *Balfour fil. in Proc. Roy. Soc. Edinb.* vol. xi. (1882) p. 503; *in Trans.* vol. xxxi. p. 32, tab. v. A.

The very beautiful plant here figured was discovered by Mr. Scott, who accompanied Dr. J. B. Balfour, F.R.S., during his exploration of the Island of Socotra, under the auspices of the Royal Society of London and the British Association in 1879. Dr. Balfour describes it as a small tree, growing on the slope of Haghier, near Adho Duneko, and elsewhere, at considerable elevations.

Seeds of *H. Scotti* were received by the Royal Botanical Gardens, Edinburgh, in 1899, from Dr. H. O. Forbes, Curator of the Free Public Museum of Liverpool, who visited Socotra in 1898-9. From these plants were raised that flowered in those gardens June, 1901, which furnished the specimen here represented.

Judging from native herbarium specimens, the plant has greatly benefited by its transport from the arid rocks of Socotra to a hot-house in Scotland. Its nearest allies are *H. Kirkii*, Mart., of Mozambique, and the widely spread Indian and African *H. panduræformis*, Burm.

Descr.—A large bush or small tree more or less

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hispidulous, except the corolla, with stellate hairs. *Leaves* shortly petioled, elliptic, ovate, or sub-rhomboid, entire or three-lobed, crenate or toothed, palmately three- to five-nerved; base cuneate, rounded or cordate, dark green above; stipules small, subulate. *Flowers* one to three, on axillary, stout, erect peduncles, shortly pedicelled, three and a half inches in diameter. *Bracts* of the involucel ten to twelve, about half an inch long, lanceolate. *Calyx* as long as the bracts, cup-shaped, variously cleft. *Corolla* bright golden-yellow, with carmine at the base of the tube within, lobes orbicular. Staminal tube covered throughout with pale yellow anthers. *Stigma* three-lobed, lobes globose, blood-red. *Capsule* about half an inch long, globose or ovoid, glabrous; valves smooth. *Seeds* reniform, hairy.—*J. D. H.*

Fig. 1, pedicel with involucel, calyx and ovary; 2, stellate hairs; 3, anthers:—*all enlarged.*

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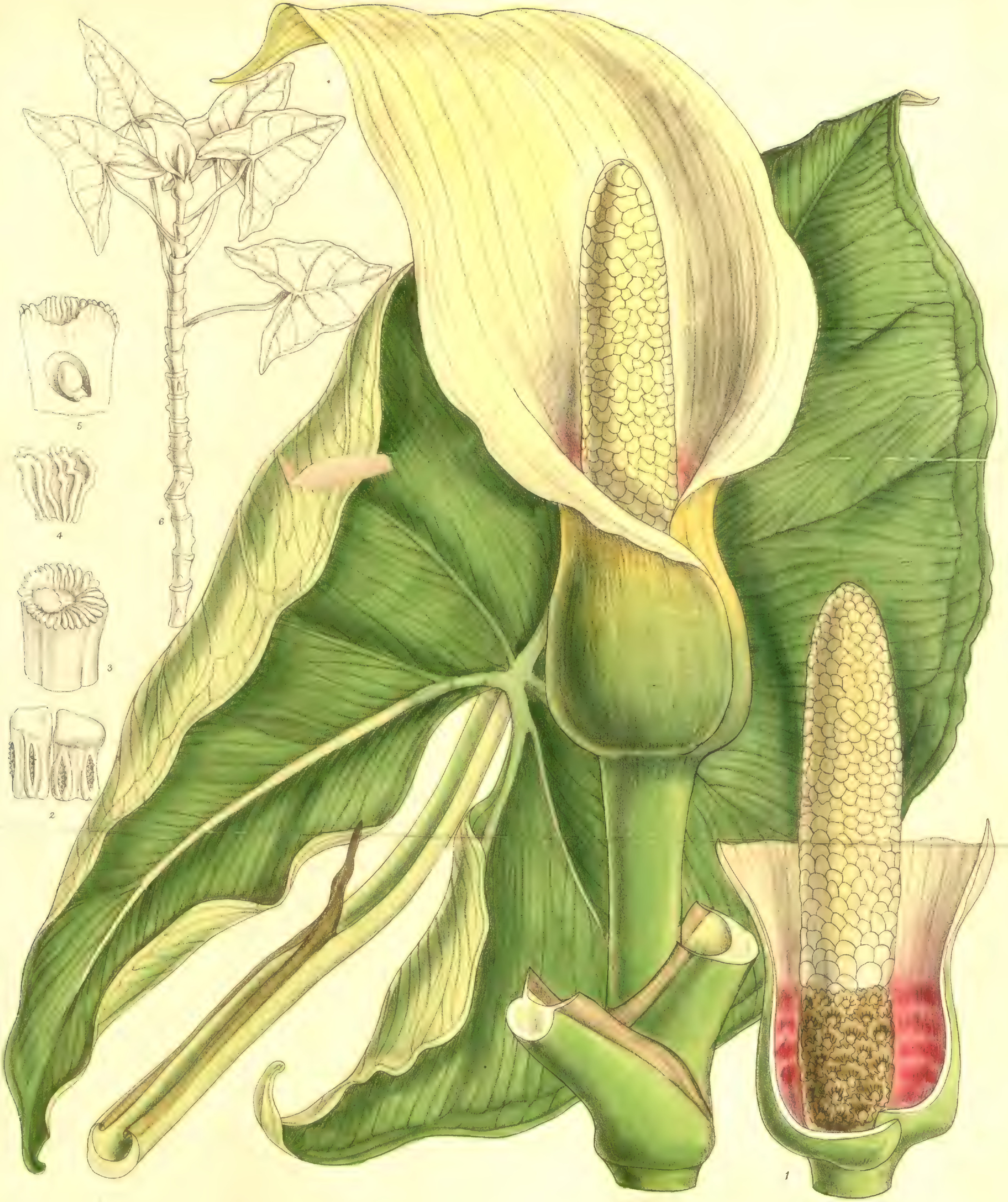

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TAB. 7817.

MONTRICHARDIA ACULEATA.

Native of the West Indies and Amazons River.

Nat. Ord. AROIDEÆ.—Tribe PHILODENDREÆ.

Genus MONTRICHARDIA, *Crüg.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 982).

MONTRICHARDIA *aculeata*; caudice elongato robusto tereti annulato lævi v. hic illic spinuloso, foliis pedalibus ovato- v. deltoideo-oblongis acuminatis fere ad medium sagittatis supra læte viridibus costis nervisque pallidis subtus flavo-viridibus nervulo marginali tenuissimo, lobis posticis inæqualibus valide costatis obtuse acuminatis sinu lato v. angusto antico paullo breviore late triangulari-ovato, petiolo lamina breviore supra concavo dorso rotundato, vagina marginibus petioli longe adnata dein libera elongata lanceolata, pedunculo brevi crasso ⅔ poll. diam., spathæ 8 poll. longæ tubo bipollicari fere globoso 1¾ poll. diam. flavo-viridi intus roseo, lamina explanata ovato-lanceolata acuminata extus flavo-viridi intus pallide citrina, spadice 4½ poll. longo crasso apice rotundato, infl. ♂ fere pollicem diam. colore spathæ, antheris sessilibus crassis subtrigonis truncatis rimis brevibus extus dehiscentibus, infl. ♀ quam ♂ triplo breviore fusco-viridi, ovariis subprismaticis truncatis 1-locularibus, stigmate sphinctriformi centro umbonato.

M. aculeata, *Crüg. in Bot. Zeit.* vol. xii. (1854) p. 25. *Schott, Syn. Aroid.* p. 72; *Prodr. Syst. Aroid.* p. 217.

M. arborescens, *Schott, Arac. Betreff.* (1854) p. 4; *Syn. Aroid.* p. 71; *Prodr. Syst.* p. 215. *Engl. in Mart. Fl. Bras.* vol. iii. pars II. p. 127, t. 25; *in DC. Monogr. Phanerog.* vol. ii. *Arac.* p. 288.

M. arborea, *Schott, Syn. Aroid.* p. 72; *Prodr.* p. 217.

M. arborescens *et* aculeata, *Griseb. Fl. Brit. W. Ind.* p. 510.

Arum arborescens, *Plumier, Descr. Pl. Amér.* t. 204. *Vell. Fl. Flum.* vol. ix. t. 109.

Caladium arborescens, *Vent. Jard. Cels.* sub t. 30.

C. arborescens *et* C. aculeatum, *G. F. W. Mey. Prim. Fl. Esseq.* p. 274.

Philodendron arboreum, *Kunth, Enum. Pl.* vol. iii. p. 48.

A noble tropical Aroid, native of various localities near the coast from the West Indies to the Amazons River. The late Hermann Crüger, Superintendent of the Botanical Gardens of Trinidad, who founded the genus, named it after his friend, Count Montrichard, of that island, a zealous promoter of science. He described it as forming thickets in moist places near the sea.

The plant here figured was sent to the Royal Gardens, Kew, by Mr. Jenman, F.L.S., Superintendent of the Botanical Gardens, and Government Botanist, British Guiana, in

FEBRUARY 1ST, 1902.

1890, it is now eight feet high. It flowered in the Tropical Aquatic House in June, 1900, and again in 1901.

Descr.—*Stem* tall, robust, terete, annulate, smooth or here and there spinulose. *Leaves* a foot long, ovate or deltoidly oblong, hastate to the middle, with a broad or narrow sinus, bright green above with pale yellow midrib and nerves; basal lobes unequal, stoutly costate, dimidiately ovate-oblong, obtusely acuminate, terminal broadly deltoid, cuspidate, intra-marginal nerve slender. *Petiole* very stout, concave above; sheath adnate to the margins of the petiole, with a long, free, narrow limb. *Peduncle* short, very stout. *Spathe* eight inches long; tube two inches long by one and three-quarters in diameter, yellow-green externally, red within, base rounded; lamina six inches long, ovate-lanceolate, open and recurved, acuminate, yellow-green externally, lemon-yellow within. *Spadix* four and a half inches long, sub-sessile, cylindric, nearly one inch in diameter, top rounded. *Male inflorescence* three inches long; anthers closely packed, trigonous, truncate; cells linear, extrorse. *Female inflorescence* an inch long. *Ovaries* sub-prismatic, truncate, one-celled, one-ovuled.—*J. D. H.*

Fig. 1, section of tube of spathe with spadix; 2, anthers; 3, ovary; 4, portion of truncate surface of ovary; 5, vertical section of ovary:—*all enlarged*:—6, *reduced* view of whole plant.

7818

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Tab. 7818.

PLECTRANTHUS Mahonii.

Native of British Central Africa.

Nat. Ord. Labiatæ.—Tribe Ocimoideæ.

Genus Plectranthus, *L'Hér.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1175.)

Plectranthus (Germanea) *Mahonii*; herba perennis, erecta, ramosa, ramulis puberulis, foliis 3–5-poll. longis petiolatis ovatis obtusis grosse crenatis inferioribus in petiolum angustatis superioribus basi cordatis supra glabris læte viridibus subtus puberulis pallidis, racemis sessilibus 3-8-pollicaribus simplicibus laxifloris puberulis, verticillastris 3–6-floris, pedicellis $\frac{1}{8}$–$\frac{1}{6}$ pollicaribus, bracteis parvis ovatis viridibus, calyce $\frac{1}{8}$ poll. longo campanulato ad medium bilabiato, labio superiore late ovato erecto, inferiore 3-dentato dentibus deltoideis, corolla declinata puberula violacea, tubo calyce paullo longiore, fauce tumido, limbi $\frac{2}{3}$ poll. longi labio postico 3-lobo, lobo superiore erecto bilobulato lateralibus rotundatis multo majore, inferiore cymbiformi, filamentis liberis, antheris dorso glandulosis, disco crasso lobato.

P. Mahonii, *N. E. Brown mss.*

Coleus Mahonii, *Baker in Dyer, Fl. Trop. Afr.* vol. v. p. 434.

The genus *Plectranthus*, a very large one, confined to the Old World, is represented in the "Flora of Tropical Africa," by seventy-eight species, a number rapidly being added to as collections arrive from that botanically little explored country. Owing to the difficulty of determining in herbarium specimens the freedom or connation of the filaments, the characters that separate *Plectranthus* from *Coleus* (of which there are seventy-seven described African species), *P. Mahonii* was first described under the latter genus.

The specimen here figured was raised from seed sent to the Royal Gardens, Kew, in 1898, by Mr. John Mahon, of the Botanical Department of British Central Africa, from Zomba, a mountain upwards of five thousand feet high, situated a little to the West of Lake Shirwa, in lat. 15½° S. It flowered in a greenhouse in November, 1900, and continued in flower throughout the winter.

Descr.—*Stem* three feet high, acutely four-angled, and branches puberulous. *Leaves* three to four inches long, the lower narrowed into the petiole, the upper cordate,

February 1st, 1902.

ovate, sub-acute, coarsely unequally crenate-serrate, bright green and glabrous above, puberulous beneath. *Racemes* three to eight inches long, simple, sessile, loosely many-flowered; whorls three- to six-flowered; bracts minute; pedicels slender, one-eighth to one-sixth of an inch long. *Calyx* about as long as the pedicel, puberulous, campanulate, two-lipped, upper lip broadly ovate, lower with three small ovate teeth. *Corolla* puberulous externally, violet-blue, tube hardly longer than the calyx; lips widely divaricate, upper lip broadly three-lobed, midlobe bilobulate, erect, lobules rounded, lateral lobes very short, rounded; lower lip cymbiform.—*J. D. H.*

Fig. 1, side view of flower; 2, section of calyx showing disk and ovary; 3, corolla seen in front; 4 and 5, anthers:—*all enlarged.*

7819

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Tab. 7819.

MINKELERSIA biflora.

Native of Mexico.

Nat. Ord. Leguminosæ.—Tribe Phaseoleæ.

Genus Minkelersia, *Mart. & Gal.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 539.)

Minkelersia, *biflora*; herba gracilis, volubilis, radice tuberoso, caule pubescenti-pilos, internodiis longiusculis, foliis pinnatim trifoliolatis, fere glaberrimis, petiolo elongato, foliolis 1–$1\frac{1}{4}$ poll. longis subæqualibus obtusis lateralibus oblique ovato-rotundatis, intermedio longius petiolulato, ovato æquilatero, stipulis $\frac{1}{4}$ poll. longis ovato-rotundatis obtusis, stipellis subulatis, pedunculis axillaribus foliis longioribus erectis apice bracteatis et bibracteolatis bifloris, bracteis stipulis consimilibus, floribus sessilibus ad $1\frac{1}{2}$ poll. longis, calyce pubescente $\frac{1}{2}$ poll. longa, tubo lobis erectis inæqualibus oblongis obtusis breviore, vexillo spathulato concavo, alis longe unguiculatis carinæ leviter cohærentibus lamina oblique rotundata basi semicordata recurva purpurea, carina angusta apice cum styli apice filamentisque spiraliter involutis, ovario angusto piloso ad 20-ovulato, stylo gracili glabro apice torto piloso, stigmate parvo ovato, legumine lineari apice pungente teretiusculo polyspermo, valvis subtorulosis.

M. biflora, *Hemsl. Diagn. Pl. Nov.* pars II. p. 48; *Biol. Cent. Amer.* vol. i. p. 308, t. xvi. fig. 1–7.

Three species of *Minkelersia* are known, all Mexican; namely, *M. galactioides*, Mart. et Gal., a native of the Cordillera of Oaxaca, at four thousand to six thousand feet elevation; that here figured, which was discovered by Schaffner in the Valley of Mexico, and a third from the Sierra Madre. The genus is considered by Bentham to be little more than a section of *Phaseolus*, distinguished by its longer calyx-lobes, and the elongate petals. It was named in compliment to the Professor of Physics in the University of Louvain, Dr. Minkelers.

Seeds of *M. biflora* were sent to the Royal Gardens, Kew, in 1897, by Dr. J. N. Rose, Assistant Curator of the National Herbarium of the United States of America, at Washington, plants raised from which flowered in a cool house in October, 1900.

Descr.—Root tuberous. *Stem* elongate, very slender, twining, sparsely hairy. *Leaves* trifoliolate, petiole two to three inches long; leaflets sub-equal, orbicular-ovate,

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obtuse, lateral sub-sessile, unequal-sided, stipellate, terminal shortly petiolulate, sub-cordate at the base, obscurely stipellate on the petiolule; stipules one-fourth of an inch long, nearly orbicular, persistent, deflexed, glabrous; stipellæ very minute, subulate. *Peduncles* axillary, longer than the petioles, erect, two-flowered. *Bracts* like the stipules, but smaller. *Flowers* very shortly pedicelled, erect, one and a half inches long, pale red-purple. *Calyx* half an inch long, oblong, hairy, cleft to below the middle into five, unequal, erect, linear-oblong, obtuse lobes. *Standard* spathulate, concave, slightly incurved. *Wings* long-clawed, orbicular, as long as, but much broader than the standard, spreading and recurved. *Keel petals* very narrow, rather shorter than the standard, tips spirally involute, with the tips of the filaments and of the style which they enclose. *Staminal* tube long, narrow, filaments very short, contorted; anthers minute, oblong. *Ovary* very hairy, produced into a filiform style, which is hairy, and twisted at the tip. *Pod* linear, straight, sub-terete, tip pungent; valves sub-torulose. *Seeds* very small, obtusely sub-cubical.—*J. D. H.*

Fig. 1, bracts, calyx, and keel enclosing stamens and ovary; 2, stamens; 3, ovary; 4, bracts, calyx, and pod of nat. size; 5, seed:—all except 4 *enlarged*.

7820

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Tab. 7820.

CALATHEA CROCATA.

Native of Brazil.

Nat. Ord. Scitamineæ.—Tribe Maranteæ.

Genus Calathea, *G. F. W. Mey*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 653.)

Calathea (Pseudophrynium) *crocata*; pumila, cœspitosa, glaberrima, rhizomate hypogæo ramoso, foliis subdistichis erectis longiuscule petiolatis 6–10 poll. longis ovato- v. oblongo-lanceolatis subacutis v. acuminatis supra saturate viridibus subtus roseo-purpureis basi obtusis vel rotundatis, petiolo lamina breviore fere ad apicem anguste vaginante, vagina pallida striata folii intimi interdum crocea, pedunculo foliis breviore valido erecto luride viridi superne paullo incrassato, spica brevi ad $2\frac{1}{2}$ poll. longa et lata erecta, bracteis 1–$1\frac{1}{4}$ poll. longis quinquefariis ovato-lanceolatis patenti-recurvis aurantiacis nitidis, spiculis $\frac{1}{2}$–$\frac{2}{3}$ poll. longis, 2–3-floris, bracteolis lineari-oblongis flores æquantibus, sepalis 3 lineari-lanceolatis roseis, corollæ aurantiacæ tubo brevi segmentis lineari-oblongis acuminatis, staminodiis 3 tubo corollæ adnatis bicallosis, callo majore laterali triangulari, filamento petaloideo 2-partito, stylo crasso curvo flavo, stigmate indusiato, ovario globoso 3 loculare roseo.

C. crocata, *E. Morr. et Joriss. in Belg. Hortic.* vol. xxv. (1875). p. 141, t. 8, *Floral World*, 1876, p. 161. *Gard. Chron.* 1900, vol. ii. p. 113, fig. 29.

The genus *Calathea*, of which only about sixty species were known a quarter of a century ago, now numbers nearly twice as many; all, except a few tropical African, are American, and are very difficult of determination from Herbarium specimens. The excellent figure of *C. crocata* in the Belgique Horticole allows of no doubt as to the name of the plant here under consideration, and the accompanying description given by the authors of its complicated sexual organs is very complete. The species was introduced from Brazil in 1874 by Messrs. Jacob Makoy of Liège. The specimen here figured was purchased at an auction sale for the Royal Gardens, Kew. It flowered in May, 1901.

Descr.—Whole plant ten to twelve inches high. *Rootstock* short, branching. *Leaves* sub-distichous; petiole two to three inches long, sheathing nearly throughout its length, hardly auricled at the mouth of the sheath, pale green or purplish, that of the uppermost leaf bright orange; blade four to five inches long, erect, ovate-lan-

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ceolate, sub-acute or acuminate, rather undulate, dark green above, bright rose-purple beneath. *Peduncle* shorter than the leaves, slightly thickened upwards, dull green. *Spike* short, erect, two to two and a half inches broad and long; bracts quinquefariously spreading and recurved, ovate-lanceolate, acuminate, bright orange-coloured; spikelets about half as long as the bracts, two- to three-flowered; bracteoles linear-oblong, as long as the flowers, orange-coloured. *Sepals* linear-lanceolate, rose-red. *Corolla* orange-yellow, tube short, lobes linear-oblong, acuminate. *Staminodes* adnate to the corolla-tube. *Stamen* petaloid.—*J. D. H.*

Fig. 1, bracteoles and flowers; 2, staminodes, anther, style and stigma; 3, staminode; 4 style, anther and stigma:—*all enlarged.*

M.S. del, J.N. Fitch lith.

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Tab. 7821.

SOLANUM Xanti.

Native of California.

Nat. Ord. Solanaceæ.—Tribe Solaneæ.

Genus Solanum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 888.)

Solanum (Pachystemon) *Xanti*; suffrutex v. herba basi lignosa, inermis, tota, corolla excepta, plus minusve pilis simplicibus glandulosisque pubescens, ramis gracilibus, foliis polymorphis ½–4 poll. longis ovatis ovato-oblongis v. lineari-oblongis obtusis subacutisve integris repandisve basi rotundatis cordatis v. rarius auriculato-bilobis submembranaceis pallide flavo-viridibus, nervis utrinsecus 6–8 arcuatis, petiolo ¼–¾ poll. longo, cymis umbelliformibus lateralibus v. terminalibus, ramulis infra pedicellos tuberculo minuto cupuliforme instructis, pedicellis gracilibus 1–1½ poll. longis, floribus nutantibus, calycis campanulati lobis triangulari-ovatis obtusis, corolla rotato-campanulata pentagona 1–1¼ poll. lata violacea basi intus plagis 5 albis centro viridibus ornata, filamentis brevibus pilosis, antheris lineari-oblongis obtusis rimis elongatis dehiscentibus, ovario glabro, stylo gracili recto, bacca globosa purpurea calyce paullo dilatato suffulta.

S. Xanti, *A. Gray in Proc. Amer. Acad.* vol. xi. (1876) p. 90; *in Bot. Calif.* vol. i. p. 539, ii. p. 471.

A very beautiful plant, native of Southern California, where it was first collected by Mr. L. J. Xantus de Vesey, extending as far north as Sta. Barbara and eastward into Nevada. A variety, *Wallacei*, A. Gray, *l.c.*, has larger leaves and flowers, and the cymes are villous with longer, viscid, jointed hairs; it is a native of Santa Catalina Island, off the coast of California in about 33° lat.

The specimen here figured of *S. Xanti* was sent to me from the Botanic Gardens of the University of Cambridge in July, 1900, by Mr. Lynch, who informs me that he received it from Dr. Franceschi, of the Southern Californian Acclimatisation Association, Santa Barbara.

S. Xanti is remarkable for the extraordinary variability of the leaves. In some native specimens these are only half an inch long and oblong, in others much longer and linear, oblong or ovate, in others four inches long, ovate, entire or with two broad unequal basal auricles. The minute cup-shaped tubercle in each branch of the cyme, beneath the insertion of the pedicels, is a character common to several American species. The purple fruit is sometimes as large as a cherry.

Descr.—Whole plant, except the corolla and ovary, more or less pubescent, with simple and gland-tipped hairs. *Stem* branched, woody at the base. *Leaves* soft, polymorphous as described above, obtuse or acute, pale yellow-green, base acute, rounded or sub-cordate; nerves many, strong. *Cymes* terminal or on short, lateral branchlets, umbelliform, shortly peduncled; pedicels slender, one to one and a half inch long, spreading, decurved. *Calyx* small, campanulate, green, lobes triangular-ovate, obtuse. *Corolla* an inch to an inch and a half broad, between rotate and campanulate, limb five-angled or very shortly and broadly five-lobed, pale purple, base with five orbicular, white spots, each with a green centre. *Filaments* short, hairy; anthers linear-oblong, dehiscing throughout their length. *Ovary* quite glabrous; style filiform. *Berry* globose, purple.—*J. D. H.*

Fig. 1, portion of branch with simple and glandular hairs; 2, calyx; 3, base of corolla and stamens; 4, ovary:—*all enlarged*; 5, fruit of *nat. size.*

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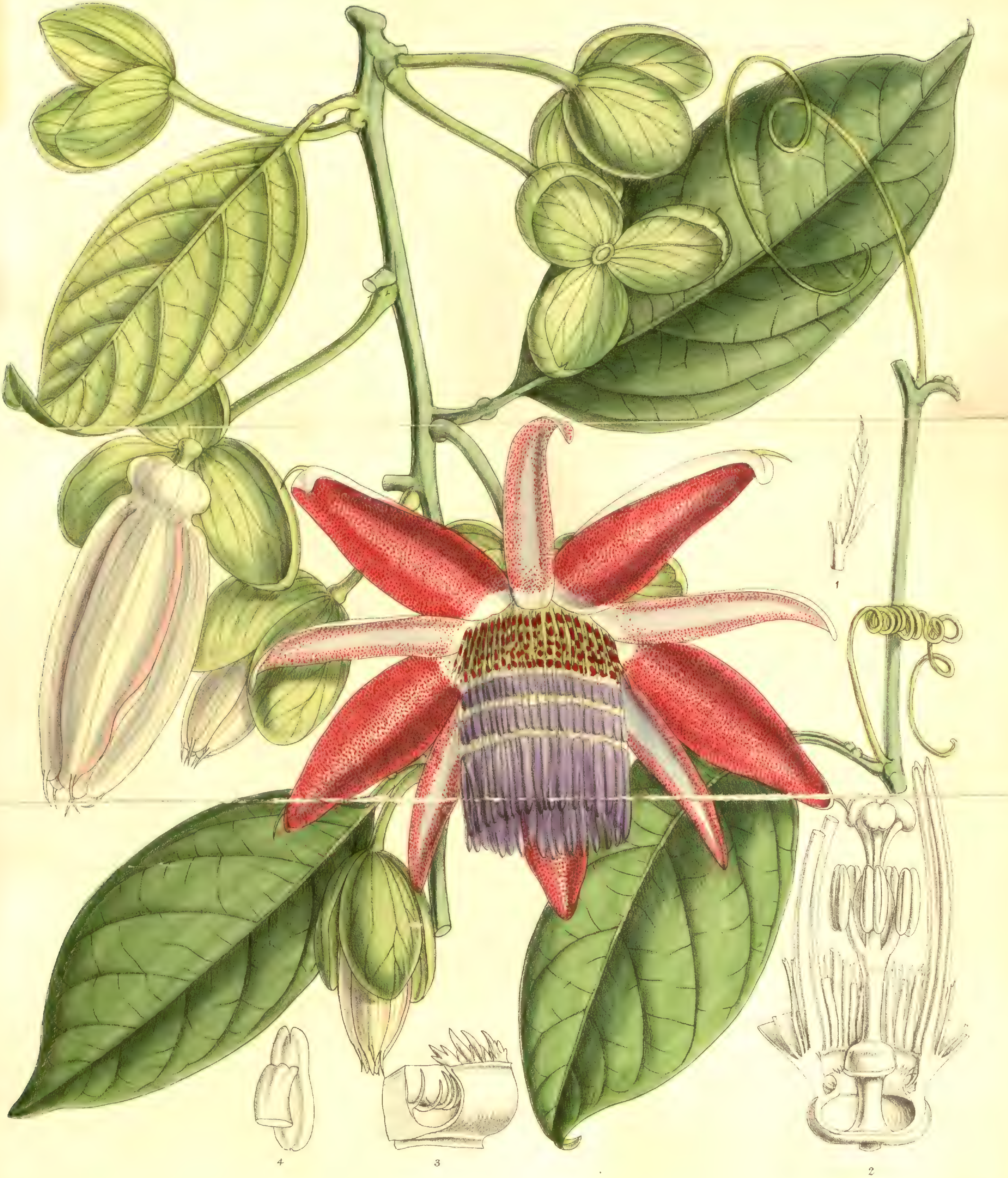

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Tab. 7822.

PASSIFLORA AMBIGUA.

Native of Nicaragua.

Nat. Ord. Passifloreæ.—Tribe Passifloreæ.

Genus Passiflora, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 810.)

Passiflora (Granadilla) *ambigua*; glaberrima, ramis ramulisque subteretibus, foliis petiolatis oblongo- v. ovato-lanceolatis cuspidato-acuminatis superioribus 3–5 inferioribus 8–10 poll. longis coriaceis basi rotundatis utrinque 6–10-nerviis, petiolo ½–1 poll. longo medio v. infra medium 2-glanduloso, stipulis filiformibus caducis, cirrhis simplicibus, pedunculis solitariis v. 2-nis axillaribus 1½–2 poll. longis, bracteolis 3 infra apicem pedunculi sitis pollicaribus fere orbiculatis concavis erosis eglandulosis, floribus 5 poll. diam., perianthii carnosi tubo oblato basi intruso sub 10-lobo, sepalis 5 anguste lineari-oblongis dorso costatis et infra apicem obtusum caudiculatis extus albis intus rubro-purpureo creberrime punctatis, petalis sepalis angustioribus lineari-lanceolatis subacutis albis margines versus roseo-punctatis, coronæ exterioris segmentis 2-seriatis, extimis ad ½-pollicaribus gracilibus rubris albo variegatis intimis 2–2½ poll. longis crassioribus complanatis subacutis violaceis albo fasciatis, coronæ intermediæ fere basilaris pilis brevibus uniseriatis, corona intima annulari recurva fimbriata.

P. ambigua, *Hemsl. mss.*

The above description of *Passiflora ambigua* is taken almost wholly from one kindly lent me by Mr. Hemsley. It was drawn up by him from a specimen which was raised from seed received in 1896 from Mr. E. G. Sturridge, Nurseryman, of Blewfields in Nicaragua, which flowered in the Palm House of the Royal Gardens, Kew, in May, 1901. Mr. Hemsley regards its affinity so close with *P. laurifolia*, Linn. (Jacq. Hort. Vindb. ii. t. 162) and *P. maliformis*, Linn. (Bot. Reg. t. 94), as to suggest the possibility of its being of hybrid origin. Premising that *P. ambigua* is a very much larger plant, with flowers more than double the size, and with a differently coloured perianth, it further differs from *P. laurifolia* in the petiole being biglandular in the middle, not at the apex, in the bracteoles being eglandular, in the leaves not being cordate at the base, and in the long filaments of the corona having obtuse not subulate tips. From *P. maliformis* it differs in the same characters of the leaf-base, size of flower and long

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filaments of the corona, and also in the stipules being linear, not ovate with subulate tips.

Descr.—A glabrous, stout, climbing shrub, with subterete stem and branches. *Leaves* eight to ten inches long, oblong- or ovate-lanceolate, cuspidately acuminate, base cuneate or rounded; petiole one half to one inch long, biglandular about the middle. *Stipules* very slender, about four-tenths of an inch long, deciduous. *Tendrils* unbranched. *Peduncles* solitary or binate, axillary, one and a half to two inches long. *Bracteoles* inserted beneath the apex of the peduncle, about an inch long, nearly orbicular, concave, green, eglandular. *Flowers* five inches in diameter; perianth fleshy, tube oblate, deeply intruded, and almost ten-lobed at the base. *Sepals* 5, narrowly linear-oblong, obtuse, dorsally white and costate, with a short horn below the apex, ventrally pale pink, closely punctulate with rose-purple. *Petals* shorter and much narrower than the sepals, linear-lanceolate, sub-acute, white, dotted with rose-purple towards the margin. *Corona* nearly two inches long; outer filaments about one-third as long as the inner, very slender, red, banded with white; inner filaments stout, fleshy, obtuse or sub-acute, violet, banded with white; innermost corona very short, basilar, recurved, ciliate.—*J. D. H.*

Fig. 1, young leaf and stipules of the *natural size*; 2, vertical section of base of perianth with pistil, stamens, and some of the coronal filaments; 3, portion of innermost corona; 4, dorsal view of anther and filaments:—*all enlarged.*

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TAB. 7823.

JASMINUM MAINGAYI.

Native of Penang.

Nat. Ord. OLEACEÆ.—Tribe JASMINEÆ.

Genus JASMINUM, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 674).

JASMINUM *Maingayi*; frutex scandens, gracilis, ramosus, ramulis superne pedunculis pedicellis calycibusque puberulis, foliis superioribus breviter inferioribus longius petiolatis ovato-oblongis-lanceolatisve acutis acuminatisve 3–5 poll. longis 1½–2 poll. latis basi acutis rotundatis cuneatisve supra saturate viridibus nervis utrinque costæ 6–8 obscuris, subtus pallidis nervis prominulis, petiolis fusco-violaceis, cymis terminalibus sessilibus, pedicellis brevibus erectis, bracteolis parvis linearibus, calycis tubo subcampanulato ⅛ poll. longo segmentis erectis lanceolatis tubo subduplo longioribus, corollæ tubo pollicari, limbi albi 1½ poll. diam. segmentis 8–10 anguste oblongis acuminatis, antheris lineari-oblongis apiculatis, stylo gracili, stigmatis lobis linearibus, carpellis maturis solitariis dimidiato-oblongis ½ poll. longis monospermis.

J. Maingayi, *C. B. Clarke in Hook. f. Fl. Brit. Ind.* vol. iii. p. 594.

Jasminum is exclusively an Old World genus of very wide distribution, from the Azores and Canaries in the West, across Africa and Asia, to the Islands of the Pacific, chiefly in tropical latitudes. India (or perhaps China) is the headquarters of the genus, forty-five of the one hundred and thirty recorded species being described in the "Flora of British India," of which four have been figured in this work; two with entire leaves and white flowers, *J. Sambac*, L. t. 1785, and *J. pubescens*, Willd. (*hirsutum*, Willd. t. 1991); and two with pinnatisect leaves, the yellow flowered, *J. humile*, Linn. (*J. revolutum*, Sims, t. 1731), and the common white-flowered Jessamine of our gardens, *J. officinale*, Linn. (t. 31). With regard to the last named species, it is a remarkable fact, that for upwards of two hundred and fifty years after its first introduction into English gardens (in 1548) its native country was unknown. Sims, in this Magazine, in 1787, cites Miller's "Gardener's Dictionary" for its "growing naturally in Malabar and several parts of India;" Aiton, "Hortus Kewensis"

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(1810), gives no native country; Alph. De Candolle (1844) cites the Caucasus, Imiretia, Canton, and India? It is only comparatively recent authors who have recognized it as indigenous in the Himalaya, where it is found at elevations of seven thousand feet to eight thousand feet in Kumaon, and three thousand feet to nine thousand feet in Kashmir, whence, no doubt, it has spread under cultivation, or in a semi-wild state westward to the Mediterranean, and eastward to China. It is worthy of remark that there is hardly any variation from pure white or yellow in this large and widely diffused genus.

J. Maingayi is a native of Penang, where it was found by the late accomplished botanist, Dr. A. C. Maingay, who was killed when quelling an outbreak of prisoners at Rangoon in 1869. The figure is from a plant presented to the Royal Gardens, Kew, by Messrs. F. Sander & Co. of St. Albans, which flowered in a tropical house in June, 1901.

Descr.—A slender, scandent shrub, with pubescent branchlets, cymes, and calyces. *Leaves* three to four inches long, ovate-oblong or -lanceolate, acute or acuminate, base acute, cuneate or rounded, dark green above, pale beneath, nerves six to eight pairs; petiole of upper leaves short, of lower an inch long or more. *Cymes* terminal, sessile, fascicled; pedicels short, erect; bracteoles very small, linear. *Calyx-tube* about an eighth of an inch long, sub-campanulate; segments about twice as long, lanceolate, erect. *Corolla* white; tube an inch long; limb an inch and a half in diameter, segments eight to ten, narrowly oblong, acuminate. *Anthers* linear-oblong, apiculate. *Style* slender; stigmatic lobes linear. *Fruit* of one dimidiate-oblong, one-seeded, dry carpel half an inch long.—*J. D. H.*

Fig. 1, calyx, style and stigma; 2 and 3, anthers; 4, ovary:—*all enlarged*; 5, fruit, of the *nat. size.*

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TAB. 7824.

MASDEVALLIA ELEPHANTICEPS.

Native of New Grenada.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus MASDEVALLIA, *Ruiz & Pav.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 492.)

MASDEVALLIA (Coriceæ) *elephanticeps*; foliis 6–10-pollicaribus lineari-oblongis oblanceolatisve in petiolum crassum angustatis crasse coriaceis supra luride viridibus, petiolo antice sulcato basi vaginis 1–2 tubulosis membranaceis laxis pallide brunneis instructo, pedunculis petiolo subæquilongis subflexuosis deorsum attenuatis monocephalis internodiis $\frac{1}{3}$–$\frac{3}{4}$ poll. longis, vaginis bracteisque basi tubulosis dein campanulatis acuminatis membranaceis, floribus subhorizontalibus 3–4 poll. longis crasse coriaceis, perianthii tubo saccato basi rotundato flavo-viridi purpureo suffuso, sepalo dorsali porrecto a basi late ovata in caudam validam bipollicarem flavidam angustato, lateralibus intus rubro-purpureis ultra medium connatis in caudas flavidas recurvas pollicares angustatis, petalis spathulatis obtusis dorso crasse costatis, labello oblongo obtuso densissime papilloso luride purpureo.

M. elephanticeps, *Reichb. f. et Warsc. in Bonplandia*, vol. ii (1854) p. 116, *et Xen. Orchid.* vol. i. p. 6, t. 3; *Fl. des Serres*, vol. x. t. 997 (*l.c. Xen. Orch. it.*). *Veitch, Man. Orchid. Masdev.* p. 40. *Woolw. Masdev.* p. 47, t. 16.

M. Gargantua, *Reichb. f. in Gard. Chron.* 1876, vol. ii. p. 516. *Veitch, l.c.* p. 43.

This, one of the most remarkable species of a genus distinguished for the variety of the fantastic forms assumed by its flowers, is very closely allied to *M. Mooreana*, Reichb. f., figured at t. 7015 of this work. It was discovered by the collector Warscewicz in 1850–1, on the Eastern Cordillera of New Grenada, between Ocaña and Pamplona, at elevations of six thousand five hundred feet to ten thousand feet. It has been in cultivation in the Royal Gardens, Kew, for about twenty years, flowering in the winter, and is remarkable for the fœtid odour of the flowers.

Descr.—*Leaves* six to ten inches long, linear-oblong or oblanceolate, obtuse, narrowed into a very stout petiole, thickly coriaceous, bright dark green and shining above, pale beneath; petiole with one or two lax, scarious, tubular, brown, striate, membranous sheaths. *Peduncles* one or

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more, as long as the petiole, stout, sub-flexuous, rather thickened upwards; internodes sheathed; lower sheaths short, tubular, upper, more campanulate, acute. *Flowers* inclined, three to four inches long. *Perianth* thickly coriaceous; tube two-thirds of an inch long, saccate, base rounded, yellow green, suffused with purple. *Dorsal sepal* sub-erect, narrowed from a broadly ovate base into a stout pale yellow tail two inches long; lateral sub-similar, but with larger limb, dark red purple within, and a shorter recurved yellowish tail. *Petals* spathulate, midrib dorsally very stout. *Lip* oblong, obtuse, densely clothed with very dark purple, elongate papillæ.—*J. D. H.*

Fig. 1, flower with the sepals removed; 2, column; 3, pollinia:—*all enlarged.*

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TAB. 7825.

ASTER TRADESCANTI.

Native of Eastern N. America.

Nat. Ord. COMPOSITÆ.—Tribe ASTEROIDEÆ.

Genus ASTER, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 271.)

ASTER (Euaster) *Tradescanti*; herba glaberrima, 2–4-pedalis, ramossima, ramis erectis v. ascendentibus foliosis, foliis 2–3 poll. longis sessilibus linearibus v. lineari-lanceolatis obtusis v. subacutis integerrimis v. medio pauci-serratis saturate viridibus costatis, nervis paucis obscuris, marginibus scaberulis, capitulis perplurimis ad $\frac{3}{4}$–1 poll. diam. racemosim v. corymbosim dispositis sessilibus v. breviter pedicellatis, involucri turbinati hirtelli ad $\frac{1}{6}$ poll. longi bracteis pluriseriatis coriaceis appressis lineari-lanceolatis acutis inappendiculatis rigidis viridibus, radiis albis v. rarius purpureo tinctis $\frac{1}{6}$–$\frac{1}{4}$ poll. longis, floribus disci aureis, achæniis ad $\frac{1}{15}$ poll. longis obovato-oblongis compressis lævibus puberulis.

A. Tradescanti, *Linn. Hort. Cliff.* p. 408; *Sp. Pl.* p. 876 (*non herb. et excl. Syn. Hort. Ups.*) *Ait. Hort. Kew.* vol. iii. p. 204 var. *floribus albis*; ed. II. vol. v. p. 61. *Nees, Gen. & Sp. Ast.* p. 103 (*non Syn. Ast.*) *Torr. & Gray Fl. N. Am. partim. A. Gray, in Proc. Am. Acad.* vol. xvii. p. 166; *Man. Bot. N. Un. St.* ed. V. (1880) p. 232; *Synopt. Fl. Am., Gamopet.* p. 187. *Chapm. Fl. S. Un. States*, p. 203.

A. artemisiæfolius, *Poir. Encycl. Suppl.* vol. i. p. 500.

A. fragilis, *Willd. Sp. Pl.* vol. iii. p. 2051 (*non Bot. Reg.*).

A. leucanthemus, *Desf. Cat. Hort. Par.* p. 102; *Poir.* l.c.

A. miser, *Ait. Hort. Kew.* ed. I. vol. iii. p. 205 (*non Linn.*) var. *fl. albis.*

A. parviflorus, *Nees, Gen. Sp. Ast.* p. 99.

A. tenuifolius, var. *Torr. & Gr. l.c.* 132 (*partim, non alior.*).

A. virginianus parvis floribus albis Tradescanti, *Morison, Pl. Hist. Univ. Oxon.* vol. iii. (1699) p. 121, sect. 7, t. 21, f. 42.

The historic interest of the original Michaelmas Daisy, together with the fact that (except by the rude cut in Morison's "Historia") it has not hitherto been figured, under either its own name or that of any of its synonyms, are sufficient reasons for paying it the tribute of a plate in the *Botanical Magazine.* To these reasons may be added the difficulty of recognizing it without a figure, for, according to Asa Gray, it is one of three species which are "seemingly confluent in a series." The other members of this series are *A. paniculatus*, Lam., a polymorphous species with acuminate, sharply toothed or serrated leaves, looser, larger, paniculate bands and longer ligules; and *A. salicifolius*, Ait. (Lam.?), which has shorter, often scabrous leaves, reticulately veined, and longer, usually purplish or violet ligules. The same author adds, that some forms of *A. Tradescanti*, both wild and cultivated, show an affinity with *A. dumosus*, Linn., *A. vimineus*, Lam., and *A. diffusus*, Ait., all of which may be distinguished by having more regularly and closely imbricating non-coriaceous involucral bracts, and leaves mostly whitish beneath. All of the above-named species of *Aster* are cultivated in the Herbaceous ground of the Royal Gardens, Kew, where, about twenty years ago, they were critically examined and named by Prof. Asa Gray, who had devoted years to the Asters of his native country.

A. Tradescanti is the first of the many N. American Asters cultivated in Europe, having been introduced prior to 1633 by John Tradescant, Gardener to Charles I., into his garden, Lambeth. It was, no doubt, brought over by his son, who travelled in Virginia, and who, on his return to England, brought many new plants with him. It is a native of open ground in the Eastern United States, from Canada to Virginia, and westward to Ilinois and the Saskatchewan river. Two varieties of it are described in Aiton's "Hortus Kewensis;" one with blue flowers, called Tradescant's dwarf Star-wort or Michaelmas Daisy, which A. Gray refers to *A. paniculatus*; the other, with white flowers, Tradescant's tall Star-wort, to which A. Gray confines the name. The latter is frequent in Botanic Gardens, varying a little in the size of the heads. The specimen figured is from the Cambridge Botanical Garden, where, as at Kew, it has been in cultivation probably ever since these gardens were established. It flowers in September and October.—*J. D. H.*

Fig. 1, head with unexpanded flowers; 2, ray-flower; 3, disk-flower; 4, hair of pappus; 5, stamens; 6, style-arms of disk-flower:—*all enlarged.*

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TAB. 7826.

IMPATIENS GRANDIFLORA.

Native of Madagascar.

Nat. Ord. GERANIACEÆ.—Tribe BALSAMINEÆ.

Genus IMPATIENS, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 277.)

IMPATIENS (Unifloræ) *grandiflora*; herba 4–5-pedalis, ramosa, glaberrima, ramis ramulisque crassiusculis teretibus, foliis alternis petiolatis 4–6 poll. longis ovato-lanceolatis acuminatis crenato-serratis inter nervos bullatis marginibus basin versus petioloque glandulis paucis crasse stipitatis instructis, floribus axillaribus solitariis maximis suberectis roseis, pedunculis 2–2½ poll. longis crassis erectis basi bracteola minuta triangulari instructis, sepalis 2 herbaceis ovato-rotundatis ⅓–1 poll. longis obtusis v. acutis apice mucronatis, vexillo erecto orbiculari 1–1¼ poll. diam., dorso infra apicem corniculato, alis 1½–2 poll. longis, lobis patulis basi sanguineo pictis, basali rotundato retuso, terminali longiore 1–1½ poll. lato oblique obovato intus margine interiore sinuato lobulato, labello inflato 1–1¼ diam. albo roseo reticulato abrupte in calcar album incurvum 1½–2 poll. longum attenuato, filamentis brevibus, antheris oblongis, ovario obtuso.

I. grandiflora, *Hemsl. in Hook. Ic. Plant.* t. 2655. *Gard. Chron.* 1901, vol. i. p. 110, fig. 47.

This is by far the largest flowered Balsam hitherto discovered, the flowers of native specimens being quite half as large again as are those of the cultivated plant here figured; and very much larger than those of the Ceylon *I. Hookeriana*, Arn. (tab. 4704), which has long been known as exceeding all others in this respect. Though differing from *I. Hookeriana* in inflorescence and colour of flower, *I. Hookeriana*, having sub-umbellate, nearly white flowers, these species agree fairly closely in the form of the standard and wings, the latter of which show red streaks at the base of the terminal lobe. They differ in the sepals, which are small and lanceolate in *Hookeriana*, and in the lip, which is not inflated in that plant; the glands on the petiole in *Hookeriana* are only two, and situated at the top of the latter. In the absence of fruit of both these species, it is impossible to speculate on their affinities.

Impatiens grandiflora was discovered by Mr. G. Warpur, a botanical collector, in Madagascar, where it inhabits swampy places to the N.W. of Tamatave, at twelve

hundred feet elevation. As the stems are said to root at the nodes when the plant is thrown down, there should be no difficulty in propagating it. The plant from which the figure is taken was presented to the Royal Gardens, Kew, by Mr. Warpur, where it flowered in a greenhouse in November, 1900, and continued flowering for some months.

Descr.—A glabrous, stout, branching, perennial herb. *Stem* and *branches* terete. *Leaves* alternate, petioled, three to six inches long, ovate-lanceolate, sinuate-crenate, bullate above between the nerves, with a few stoutly stalked glands on the margins towards the base and on the petioles. *Flowers* axillary, solitary, two and a half to three inches broad, bright rose-red, with crimson stripes towards the bases of the lobes of the wings. *Peduncle* stout, erect. *Sepals* two, very variable in size, orbicular-ovate, green. *Standard* orbicular, erect, shortly spurred dorsally below the tip. *Wings* very large; basal lobe orbicular, terminal obliquely obovate. *Lip* one to one and three-quarters of an inch long, turgid, white, reticulated with purple, suddenly narrowed into a stout incurved white spur an inch or more long.—*J. D. H.*

Fig. 1, base of leaf and petiole with glands:—*enlarged.*

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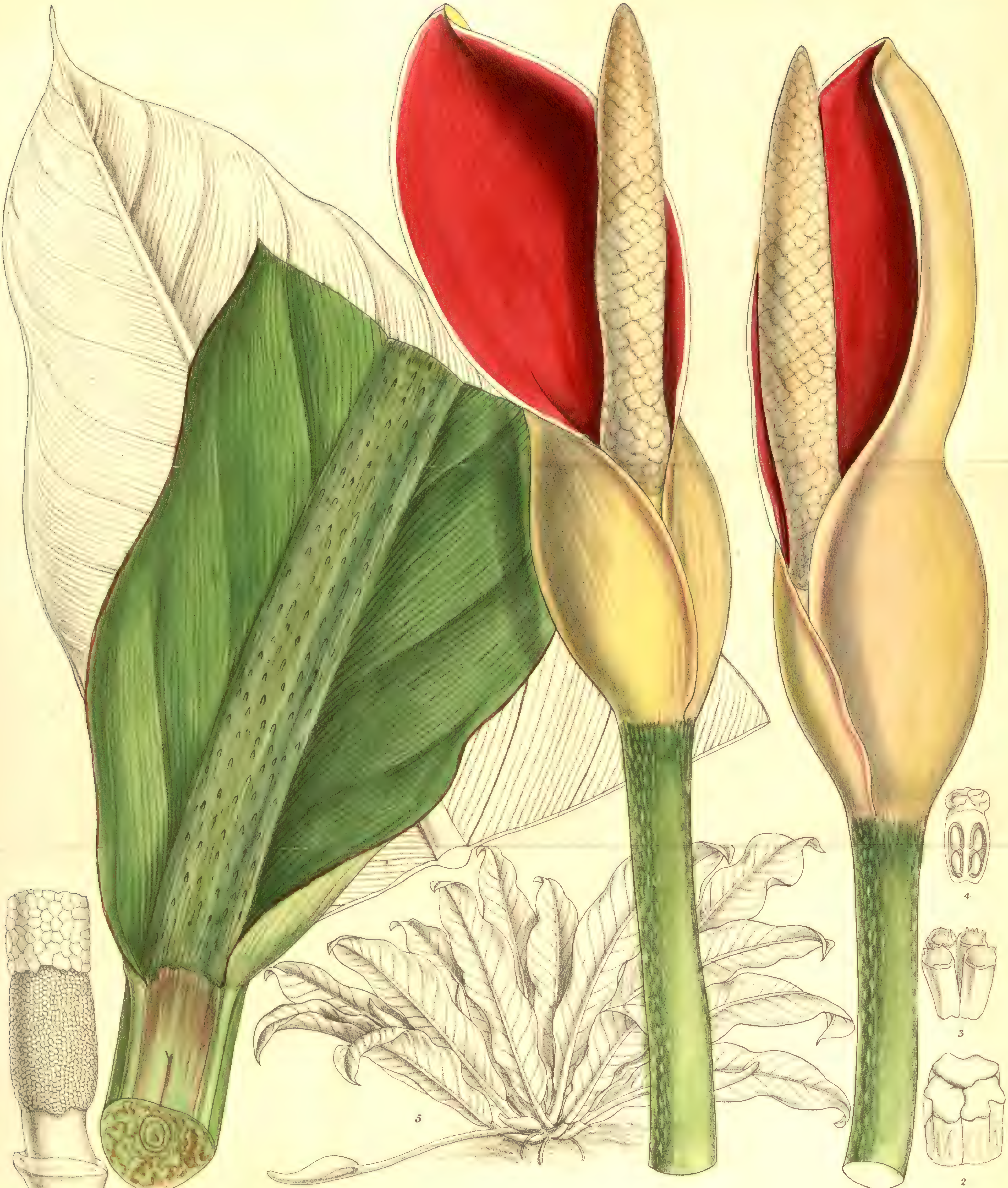

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Tab. 7827.

PHILODENDRON CALOPHYLLUM.

Native of Brazil and Guiana.

Nat. Ord. Aroideæ.—Tribe Philodendreæ.

Genus Philodendron, *Schott.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 378).

Philodendron (Baursia) *calophyllum*; glaberrimum, caudice brevissimo v. 0, cataphyllis viridi-zebrinis roseo-marginatis, foliis perplurimis confertis erecto-patentibus 2–3 ped. longis 5–6 poll. latis lineari-oblongis acuminatis apicibus recurvis crasse coriaceis basin acutum versus angustatis, supra saturate viridibus costa applanata, marginibus undulatis angustissime rubris, subtus glauco-viridibus costa crassa punctis impressis elongatis quasi striolata, nervis numerosis arcuatis, nervo collectivo margini proximo, petiolo 2–3 poll. longo crassissimo 1-poll. diam. obtuse trigono antice bicostato, pedunculis axillaribus 6–10 poll. longis patenti-deflexis teretibus ½ poll. diam. viridibus, spatha erecta 6 poll. longa crasse coriacea extus pallide flavo-viridi intus saturate kermesina marginibus albis, medium versus paullo constricta, infra medium in tubum ovoideu convoluta, supra medium cymbiforme obtusa, spadice spathæ æquilongo crasse stipitato cylindraceo apice obtuso v. subacuto, infl. masc. quam fem. quadruplo longiore, antheris majusculis pallide flavis, ovariis minimis viridibus, stigmatibus pulvinatis sessilibus.

P. calophyllum, *Brongn. ex André, Ill. Hort.* vol. xviii. (1881) p. 172, t. 76. *Engl. in Mart. Fl. Bras.* vol. iii. pars II., p. 150; *in D.C. Monogr. Phanerog.* vol. ii. p. 367.

P. niveo-chermesinum, *Linden & André, l.c.* sub t. 76.

P. Prieureanum, *Brongn. ex André, l.c.*

P. nobile, *Hort. Bull.*

A very striking species of *Philodendron*, conspicuous from the deep brilliant carmine colour of the interior surface of the spathe which is edged with white. It was discovered by Wallis, in the Valley of the Rio Branco, an affluent of the Rio Negro in North Brazil. It is also, according to Linden and André, a native of French Guiana. The specimen here figured was purchased for Kew from Mr. Bull, of Chelsea, in 1897, under the name of *Philodendron nobile*. It flowered in the Aroid house of the Royal Gardens, in April, 1901.

Descr.—*Caudex* 0 or very short. *Leaves* very many, erect and spreading all round, forming a dense head four to five feet in diameter, very shortly petioled, linear-oblong, two to three feet long, and five to six inches broad at the middle, acuminate, tips recurved, base rounded or acute,

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coriaceous, sides undulate, deep green and shining above, paler and sub-glaucous beneath; costa dorsally as thick as the thumb towards the base, marked by linear depressions giving a striate appearance, nerves very many, spreading; petiole obtusely trigonous, an inch in diameter. *Peduncle* inclined, six to ten inches long, terete, half an inch in diameter, pale green. *Spathe* six inches long, erect, coriaceously fleshy, constricted about the middle, below which it is convolute, ovoid, tapering to the base, above it cymbiform, obtuse, pale yellowish-green externally, bright carmine within, with white margins. *Spadix* as long as the spathe, shortly and stoutly stipitate, cylindric, obtuse, male portion four to five times longer than the female. *Anthers* yellow, rather large, truncate. *Ovaries* very minute, densely crowded; stigmas large, sessile, capitate—*J. D. H.*

Fig. 1, base of spadix; 2, anthers; 3, ovaries; 4, vertical section of ovary:—*all enlarged*; 5, *reduced* view of whole plant.

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TAB. 7828.

VISCUM CRUCIATUM.

Native of Spain, N.E. Africa, and Syria.

Nat. Ord. LORANTHACEÆ.—Tribe VISCEÆ.

Genus VISCUM, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 213.)

VISCUM (Euviscum) *cruciatum*; dioicum, caule tereti e basi ramoso saturate viridi, foliis subsessilibus oblongis ellipticis linearibusve obtusis basi angustatis coriaceo-carnosis obscure 3-nerviis flavo-viridibus, fl. masc. majusculis terminalibus, petalis ad ⅓ poll. longis lineari-oblongis obtusis patenti-recurvis, antheris lineari-oblongis, fl. fem. minutis ad apicem pedunculi brevissimi ternis, ovario turbinato, petalis triangularibus, baccis pedicellatis globosis fusco-rubris.

VISCUM cruciatum, *Sieb. ex Spreng. Syst. Veg.* vol. i. p. 488 (*in syn.*). *Boiss. Voy. Bot. Esp.* ii. p. 274; *Fl. Orient.* vol. iv. p. 1068. *Post, Fl. Syr. Palest. and Sinai*, p. 712. *Wilkomm & Lange Prodr. Fl. Hispan.* vol. i. p. 25, *et Suppl.* p. 6.

V. orientale, *DC. Prodr.* vol. iv. p. 278, *partim.*

V. album, *Webb, Iter Hispan.* p. 42 (*non Linn.*).

Viscum baccis purpureis, *Belon. Obs. des Singularités trouveés en Grèce, Asie, Judée, &c.* (1554), lib. II. cap. lxxxiii. *Clusius, Rar. Stirp. Hispan.* (1576) p. 47.

Viscum cruciatum was first recognized as distinct from *V. album*, by De l'Ecluse (latine Clusius), who discovered it growing on Olive trees around Hispali, in Granada, and described it in 1576. In his description of it, he observes that it appeared to him to be the same as a plant noticed by Pièrre Belon (latine Belonius seu Bellonius), who, having visited Greece, Judæa, Egypt, and Arabia, published a work in 1554 with the title cited above. That this supposed identity should prove a real one is singular, when it is considered that the plant in question has been found in no other countries than the extreme east and the extreme west of the Mediterranean Sea. Other examples of this same dislocated distribution are, however, familiar, of which *Rhododendron ponticum* is one, but this last is not a parasite, neither is it diœcious. *Viscum cruciatum* appears to be a common plant in Granada, growing usually on Olive trees, which it sometimes injures and sterilizes; but it also occurs on *Cratægus*, *Populus alba*, and *Pinus Pinaster*. In Syria, Post, in his

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excellent "Flora of Syria," gives as its range, Central and Southern Palestine, where I have myself collected it on Olive trees, and there are specimens in the Kew Herbarium from the Garden of Gethsemane, from the Temple area in Jerusalem, from Nablous, and from Moab. As in Spain, so in Syria, it sometimes is found on a *Cratægus*.

In foliage and female flowers *V. cruciatum* closely resembles *V. album*, which is also both a Spanish and Syrian plant, but the large male flowers at once distinguish *V. cruciatum*. Stress has been laid on the more distinct nerves of the leaves of the latter, but in a dried state *V. album* is almost as strongly nerved. The colour of the fruit, white in *album*, and dull red in *cruciatum*, is distinctive.

It is due to the skill of the Hon. Charles Ellis, of Frensham Hall, Shottermill, Haslemere, in grafting the seeds of *Viscum cruciatum* on Olive plants, that I owe the means of figuring this interesting plant, of which he has sent living plants, and flowering specimens of both sexes, and fruit, to the Royal Gardens, Kew. The secret of his success was, he informs me, the keeping the bark of the root moist till germination and attachment were secured; rather a tiresome job, for it means syringing every day for nearly two years. He received the seeds from the Consul at Tetuan, which, assuming that they were taken from plants native of Morocco, indicates that country as (a previously unknown) habitat for it; apropos of which I may add, that *V. album* has not been recorded as a native of Morocco, and that it is said to be an exceedingly rare plant in Algeria. The *Viscum album?* of Munby's list of Algerian plants is probably *V. cruciatum*, for Mr. Munby, who was an excellent British botanist, must have known the true *V. album* well. He probably never saw the fruit of his Algerian plant. Mr. Ellis informs me that the Olive plants which formed the stocks were seedlings which arrived from the Riviera at the same time as the *Viscum* seeds; and that he is prosecuting his experiments with the seeds of a red-berried *Loranthus* from the Transvaal, and they have germinated with him on Olive and Hawthorn. Of two plants of *V. cruciatum*, presented by Mr. Ellis to the Royal Gardens, the female has more slender branches, and smaller, narrower, thinner leaves.

Descr.—Habit, foliage, and inflorescence of *V. album*, except in the leaves being very pale yellow green, and three-nerved, the male flowers much larger, and the berries larger, longer pedicelled, and of a red-brown colour. —*J. D. H.*

Fig. 1, male plant on a branch of olive; 2, branch of female plant; both of *nat. size*; 3, petal and anther of male flower; 4, female inflorescence; 5, petal of female flower; 6, young fruit:—*all enlarged*; 7, ripe fruit of *natural size.*

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TAB. 7829.

TUPISTRA GRANDIS.

Native of the Malayan Peninsula.

Nat. Ord. LILIACEÆ.—Tribe ASPIDISTREÆ.

Genus TUPISTRA, *Ker-Gawl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 772.)

TUPISTRA *grandis*; glaberrima, caudice brevi, foliis 2–3-ped. longis 3–5 poll. latis lineari-lanceolatis longe acuminatis coriaceis supra læte viridibus basi in petiolum crassum angustatis, pedunculo crasso ½ poll. diam. geniculatim declinato bracteisque fusco-purpureis, spica 8–10 poll. longa ascendente multiflora, bracteis triangulari-ovatis acutis concavis corollæ tubo subæquilongis, bracteolis lanceolatis, perianthii tubo campanulato ½ poll. lato fusco-rubro, lobis 6 ovatis ⅓ poll. longis revolutis atro-purpureis, antheris parvis medio tubo subsessilibus oblongis, ovario ovoideo in stylum crassum album elongatum longe exsertum sensim angustato, stigmate umbraculæformi ⅓ poll. lato plano radiatim sulcato margine crenulato.

T. grandis, *Ridl. in Journ. Bot.* xxxviii. (1900), p. 73.

The species of the small tropical Indian genus *Tupistra* are confined to the Eastern Himalaya, Burma, and the Malayan Peninsula. Seven are described in the "Flora of British India," and no doubt others, besides that here described, will be discovered when the interior of the Malayan Peninsula is explored. The genus may further be expected to occur in Sumatra and China. Three species have been already figured in this work, *T. squalida*, Ker (t. 1655), from Amboyna; *T. nutans*, Wall. (t. 3054), and *T. macrostigma*, Baker (t. 6280), both the latter Himalayan.

Tupistra grandis differs from its congeners in so far as these have been fully described (some are very imperfectly known) in the long, columnar, white style, and orbicular, thin, peltate stigma, with furrows radiating from the centre to the crenulate margin. Living plants of it were sent to the Royal Gardens, Kew, in 1899, from Singapore, by Mr. H. N. Ridley, M.A., F.L.S., Director of Forests and Gardens in the Straits Settlements, which flowered in a tropical house in October of the same year. It is a native of Perak, where it was found in the dense forests of a hill called Bujong Malacca.

APRIL 1ST, 1902.

Descr.—Quite glabrous. *Caudex* short, stout, annulate. *Leaves* tufted, two to three feet long, by three to five inches broad, lanceolate, elongate-acuminate, base narrowed into a short, stout petiole, dark green and shining above; costa beneath stout; nerves many, parallel. *Peduncle* stout, terete, geniculately decurved about the middle, then ascending, nearly half an inch in diameter, uniformly red-brown. *Spike* eight to ten inches long; rhachis very stout, up-curved. *Flowers* sub-sessile, crowded. *Bracts* triangular-ovate, acute, concave, coriaceous, about as long as the perianth-tube; bracteoles as long, lanceolate. *Perianth* campanulate; tube turgid, half an inch long, red-brown; lobes six, ovate, revolute, dark red-purple. *Anthers* sub-sessile in the middle of the tube, small, peltately inserted by a very short, thickened dorsal filament. *Ovary* ovoid, narrowed into a long, columnar, white, exserted style; stigma very broad, peltate, crenulate, radiately furrowed.—*J. D. H.*

Fig. 1, section of portion of perianth with stamens; 2, dorsal view of anthers; 3, pistil:—*all enlarged*; 4, *reduced* view of plant.

7830

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Tab. 7830.

CORYDALIS THALICTRIFOLIA.

Native of China.

Nat. Ord. Fumariceæ.—Tribe Fumarieæ.

Genus Corydalis, *DC.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 55.)

Corydalis *thalictrifolia*; herba perennis, flaccida, glaberrima, pallide viridis, rhizomate lignoso, ramis suberectis pedalibus, foliis alternis longe petiolatis pinnatisectis, pinnulis 5–7 amplis oppositis paribus distantibus petiolulatis cuneato-obovatis rarius oblongis sæpissime inæqualiter 2–3-sectis, segmentis obtuse crenato-lobulatis, petiolo 2–4 poll. longo, racemis oppositifoliis et terminalibus longe crassiuscule pedunculatis 3–6 poll. longis laxe multifloris, bracteis ellipticis lanceolatisve acuminatis pedicellis multoties longioribus herbaceis persistentibus inferioribus fere pollicaribus, floribus breviter pedicellatis 1 poll. longis pallide aureis, sepalis minutis deltoideis, calcare limbo breviore leviter recurvo apice rotundato, petalis exterioribus subæqualibus ovato-lanceolatis subacutis dorso medio breviter alatis, interioribus multo minoribus spathulatis costa marginibusque incrassatis, stigmate bicruri cruribus divaricatis apice capitellatis, capsulis ad ½ poll. longis gracilibus falcatis teretibus polyspermis, seminum strophiolo cupulari.

C. thalictrifolia, *Franch. in Journ. de Botanique*, vol. viii. (1894) p. 291 (*non Jameson*).

The mountain region of China promises to be even more prolific in species of *Corydalis* than is the Himalaya, whence fifty have been described. In Hemsley's enumeration of Chinese plants, published in 1886, twenty species are included, and others have since been published, or deposited in the Kew Herbarium, bringing the number up to sixty.

Another and very different *C. thalictrifolia* was published as long ago as 1861. It is *C. thalictrifolia*, Jameson ex Regel in Bull. Soc. Nat. Mosc. xxxiv. II. 148, a Himalayan plant, erroneously entered as Chinese in the Kew Index, and it is a synonym of *C. cornuta*, Royle. It was overlooked when the genus was described in the "Flora of British India," and is not mentioned by Prain, in his "Novitiæ Indicæ" (Journal of the Asiatic Society of Bengal, lxv. II. 31), where some additional synonyms of *C. cornuta* are given.

Corydalis thalictrifolia is one of the largest Chinese species of the genus, though far from rivalling some of its great congeners in the Rocky Mts., which have no known allies

April 1st, 1902.

Mo. Bot. Garden
1903

in habit in the Himalaya or China. One of these (that I have myself gathered) *C. Brandegei*, Wats., attains five feet in height; its introduction into English gardens is much to be desired. Rev. Dr. E. Faber, who is the discoverer of so many new Chinese plants, appears to have been the first to find *C. thalictrifolia*; this was in the mountains of Ningpo. Dr. Henry has sent specimens from Ichang, at the mouth of the great gorge of Yangtze Kiang, in Hupeh, and from Yunnan, collected by Father Ducloux. Mr. W. Hancock found it at Mengtze in Yunnan.

The specimen here figured was from a plant growing luxuriantly, and flowering in July, 1901, in the rock garden of Kew, which was obtained from Messrs. Veitch & Sons, of Chelsea.

Descr.—Whole plant flaccid, pale green. *Rootstock* woody, giving off many inclined or almost decumbent, leafy stems a foot or more long. *Leaves* four to six inches long, the long petiole bearing towards the top usually five, petiolulate, oblong or cuneiform, entire or bi-trisect lobulate leaflets which are often as broad as long. *Racemes* long-peduncled, three to six inches long, leaf-opposed or terminal, loosely many-flowered. *Bracts* much longer than the pedicels, elliptic or lanceolate, spreading, green, persistent. *Flowers* an inch long, pale gold-coloured. *Sepals* minute, deltoid. *Spur* shorter than the petals, stout, incurved, tip rounded. *Larger petals* sub-equal, ovate-lanceolate, acuminate, recurved, costa with a short dorsal wing; smaller petals spathulate, with a much thickened costa and margins. *Ovary* very slender; stigma transverse, of two capitate, diverging arms. *Capsule* an inch and a half long, slender, falcate, terete, acuminate. *Seeds* many, half immersed in the cupular strophiole.—*J. D. H.*

Fig. 1, bract and flower; 2, sepal; 3, stamens; 4, pistil; 5, seeds:—*all enlarged*; 6, portion of fruiting raceme, of *nat. size*.

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Tab. 7831.

KALANCHOE somaliensis.

Native of Somaliland.

Nat. Ord. Crassulaceæ.

Genus Kalanchoe, *Adam.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 659.)

Kalanchoe *somaliensis*; glaberrima, caule robusto tereti ramoso foliisque pallide glauco-viridibus, foliis inferioribus 6 poll. longis basi lata sessilibus obovatis apice rotundatis crenato-serrulatis crasse coriaceis utrinque concoloribus, nervis obscuris, superioribus lineari-oblongis apice crenatis, cyma ampla trichotoma 6–10 poll. alta et lata, ramis ramulisque elongatis robustis, bracteis ¼–½ poll. longis ovatis oblongis obovatisve patulis integris albo-virescentibus, pedicellis ½–1 poll. longis, alabastris roseo-tinctis, sepalis erectis lanceolatis acutis ½–⅔ poll. longis pallide fusco-rubris, corolla alba flavo tincta, tubo 2½ pollicari, limbi segmentis ovato-lanceolatis acuminatis, antheris subsessilibus oblongis, disci processubus filiformibus sepalis paullo longioribus, carpellis angustis, stylis filiformibus elongatis.

The plant from which the accompanying drawing was made was, as Sir Edmund Loder informs me, collected by himself in 1890, while hunting for big game in the Golis range, near Argan, in Somaliland. He adds that on the same day he killed a specimen of the Greater Koodoo and a Lion. It flowered in a warm house of the Royal Gardens, Kew, in February, 1901. Specimens of the same species, collected by Miss Edith Cole, when accompanying Mr. and Mrs. Lort Phillips in the same country, are in the Herbarium of the Royal Gardens. *K. somaliensis* is the sixth species of the genus figured in this work within the last ten years, of which two, *K. flammea*, Stapf, t. 7595, and that here figured are natives of Somaliland; one, *K. marmorata*, t. 7333, is Abyssinian; two are Arabian, *K. Bentii*, C. H. Wright, t. 7765, and *K. farinacea*, Balf. f. t. 7769; and one, *K. thyrsiflora*, Harv. & Sond., t. 7678, is S. African.

Descr.—An erect, stout, branching shrub, of a uniformly glaucous, greenish-white colour, except the flowers. *Leaves* four to six inches long, sessile by a broad base, obovate or oblong-obovate, crenate-serrulate, tip rounded, thickly fleshy, nerves very indistinct, uppermost at the base of the inflorescence much smaller, linear-oblong, entire or

crenate at the tip. *Cyme* very large, open, six to ten inches long and broad, trichotomously branched; bracts one quarter to one inch long, oblong, ovate or obovate, fleshy; pedicels very variable in length. *Sepals* one half to two-thirds of an inch long, erect, lanceolate, acute. *Corolla* white, faintly tinged with yellow; tube two and a half inches long, pale rose-coloured in bud; segments of limb two-thirds of an inch long, ovate-lanceolate, acuminate. *Anthers* oblong, sub-sessile. *Disk* with four erect filaments rather longer than the sepals. *Styles* very long and slender.—*J. D. H.*

Fig. 1, calyx, filaments of the disk and pistil; 2 and 3, anthers:—*all enlarged.*

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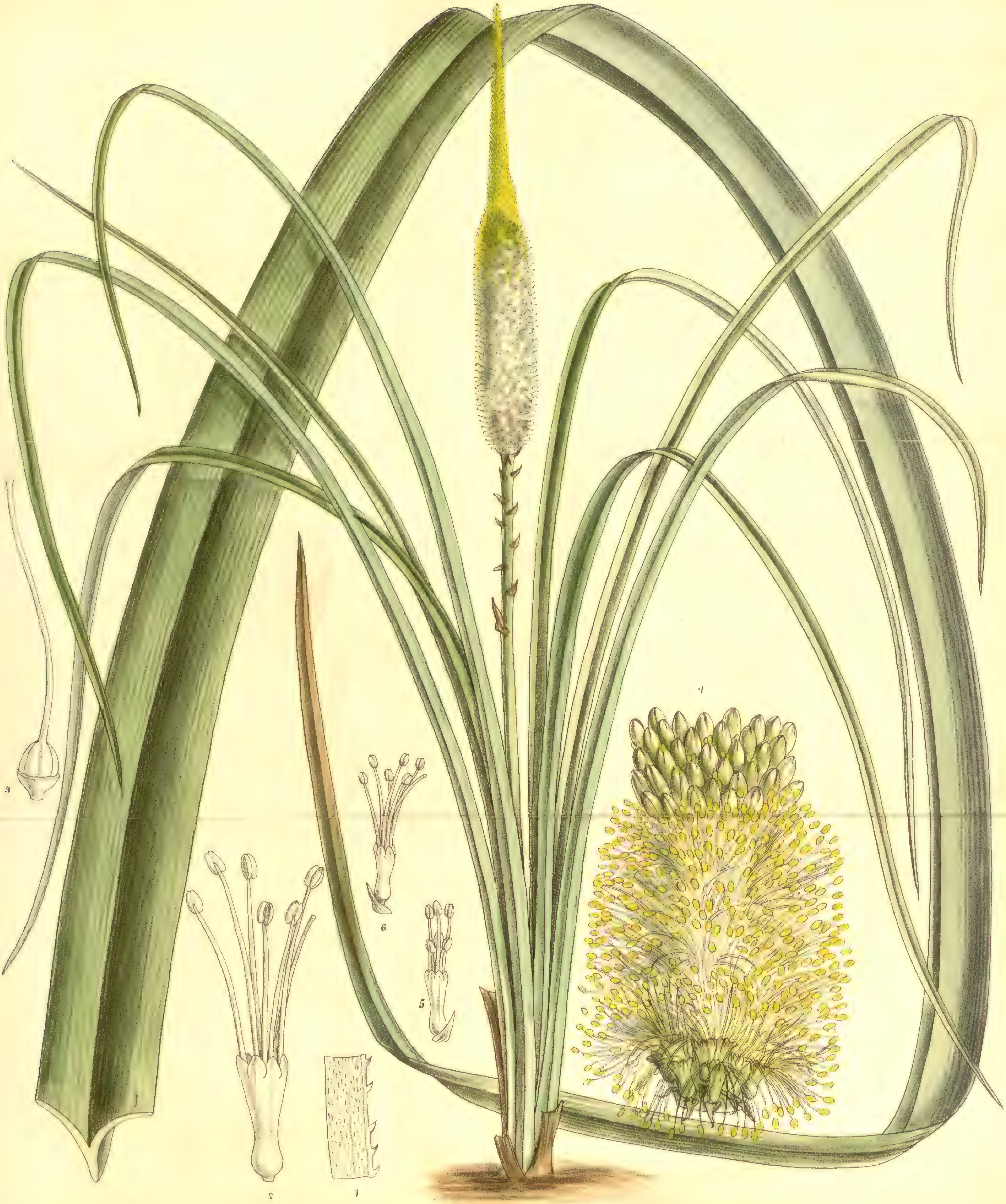

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TAB. 7832.

KNIPHOFIA MULTIFLORA.

Native of Natal.

Nat. Ord. LILIACEÆ.—Tribe HEMEROCALLIDEÆ.

Genus KNIPHOFIA, *Mœnch*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 775).

KNIPHOFIA *multiflora*; elata, foliis 3–6-pedalibus loratis rigidis supra medium 1–1½ poll. latum sensim in apicem acuminatum angustatis supra profunde canaliculatis læte viridibus nervosis subtus alte carinatis subglaucis marginibus serrulatis, pedunculo foliis breviore superne bracteis paucis sparsis instructo, spica 2-pedali 1½–2 poll. diam. cylindrica, bracteis minutis ovatis acuminatis scariosis, floribus numerosissimis sessilibus densissime congestis erectis, perianthio ½ poll. longo e basi tumido anguste infundibulari albo nunc viride tincto, lobis parvis rotundatis costa fusca, filamentis perianthio subduplo longioribus albis, antheris breviter oblongis aureis.

K. multiflora, *Wood & Evans in Journ. Bot.* vol. xxxv. (1897) p. 353. *W. Wats. in Gard. Chron.* 1900, vol. ii. p. 334. *Wood, Natal Plants*, vol. iii. Pars I. t. 206. *The Garden*, vol. lvi. (1899) p. 348, *cum ic. col.*

No South African genus of plants has supplied within late years so rich a harvest of novelties of horticultural interest as *Kniphofia*. Dr. Harvey, in the second edition of the "Genera of Cape Plants," published in 1868, gives only seven or eight as the number of species. In the "Genera Plantarum" (1883), the number given for all Africa, including Madagascar, is sixteen. Mr. Baker, in the "Flora Capensis" (1896), describes thirty-two, to which have now to be added *K. rufa*, Leichtl., tab. 7706, and the species here figured; making thirty-four in all, of which sixteen have been figured in this Magazine.

K. multiflora is one of the very few known species with erect flowers. Its nearest affinity is with *K. modesta*, Baker (tab. 7293), which differs in its much narrower leaves, loose spike, larger drooping flowers, and much shorter filaments. The only other known species with truly erect flowers is *K. pallidiflora*, Baker, of Madagascar.

K. multiflora was discovered by Mr. J. M. W. March, growing in swamps on the summit of the Drakensburg range, in Natal, between Van Reenan and Nelson's Kop, at an elevation of five thousand to six thousand feet

The specimen here figured was presented to the Royal Gardens, Kew, in 1898, by its valued correspondent, Mr. Max Leichtlin, of Baden-Baden. It flowered in an open border, under protection, in November, 1900.

Descr.—*Leaves* three to six feet long by an inch broad in the middle, from whence they taper to a long, acuminate tip, rigidly coriaceous, deeply channelled above, strongly keeled dorsally, many- and strongly-nerved, bright-green above, sub-glaucous beneath, margin serrulate. *Peduncle* stout, as long as the leaves or shorter, with a few scattered ovate bracts below the inflorescence. *Spike* two feet long, cylindric, one and a half to two inches in diameter. *Flowers* most numerous and densely crowded, very shortly pedicelled, erect, white, or suffused with green, buds yellowish. *Bracts* minute, ovate, acuminate, scarious. *Perianth* one-half to two-thirds of an inch long, swollen at the base, narrowly infundibular; lobes small, rounded, erect, midrib brown. *Filaments* almost twice as long as the perianth, white.—*J. D. H.*

Fig. 1, margin of leaf; 2, portion of spike; 3, flowers; 4, pistil:—*all enlarged*; 5, and 6, flowers with bracts of the *natural size.*

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TAB. 7833.

BERBERIS DICTYOPHYLLA.

Native of Yunnan.

Nat. Ord. BERBERIDEÆ.—Tribe BERBEREÆ.

Genus BERBERIS, *Linn.*; (*Benth. & Hook.f. Gen. Plant.* vol. i. p. 43.)

BERBERIS *dictyophylla*; frutex erectus, glaberrimus, ramis ramulisque suberectis gracilibus angulatis fuscis, spinis $\frac{1}{2}$–$\frac{3}{4}$ poll. longis validis fuscis, foliis $\frac{1}{2}$–$\frac{2}{3}$ poll. longis in ramulos laterales brevissimos fasciculatis brevissime petiolatis obovatis mucronatis parce spinuloso-serratis coriaceis subtus glauco-viridibus demum albidis elevato-reticulatis, floribus in ramulos solitariis v. binis globosis ad $\frac{1}{2}$ poll. diam., pedunculis foliis brevioribus, sepalis exterioribus oblongo-obovatis interioribus orbiculatis, petalis sepalis interioribus duplo minoribus obovatis apice emarginatis, glandulis basilaribus magnis ellipsoideis liberis vel confluentibus, antheris oblongis, baccis globoso-ellipsoideis rubris, stylo crasso stigmate magno.

B. dictyophylla, *Franch. Plant. Delav.* p. 39, t. 11.

Mr. Franchet rightly regarded *B. dictyophylla* as nearly allied to the Himalayan *B. angulosa*, Wall., from which it differs in the glabrous young shoots, much smaller glabrous leaves, glaucous beneath, and with strongly reticulate nervation, in the bicuspidate petals and larger glands. *B. dictyophylla* was discovered by the Abbé Delavay at an elevation of three thousand feet on Fanyang shan, a mountain above Mosoyn in Yunnan, in 1886, flowering in May, and fruiting in October. The specimen here figured was taken from a plant presented to the Royal Gardens, Kew, by Messrs. Vilmorin, Andrieux & Co., in 1897, which flowered in the Arboretum in May, 1901, and ripened its fruit in the following September. Its flowers are smaller than in the native specimen described by Mr. Franchet, in which they are six-tenths of an inch to seven-tenths of an inch in diameter.

Descr.—An erect, glabrous bush, six feet high, with sub-erect, angular, rather slender branches and branchlets covered with brown bark. *Spines* one half to two-thirds of an inch long, strong, dark brown. *Leaves* in small, uniform tufts, from the axils of every spine along the branchlets, shorter than the spines, sessile, obovate, cuspidate, or mucronate, with two or more long spinulose teeth on each margin, pale green above, glaucous-white beneath; nerves reticulate on both surfaces, strongly beneath, especially when fading. *Flowers* solitary, or two in each fascicle of leaves, about half an inch in diameter, pale yellow; peduncles shorter than the leaves. *Outer sepals* oblong, about half the size of the orbicular inner. *Petals* about one-third shorter than the inner sepals, orbicular, notched at the tip; glands large, ellipsoid. *Berries* drooping, globosely ellipsoid or ovoid, bright red; style very distinct, stout; stigma large, peltate.—*J. D. H.*

Fig. 1, leaf; 2, petal; 3, stamens; 4, pistil:—*all enlarged.*

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TAB. 7834.

ALOE OLIGOSPILA.

Native of Abyssinia.

Nat. Ord. LILIACEÆ.—Tribe ALOINEÆ.

Genus ALOE, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 776.)

ALOE *oligospila*; acaulis, foliis multis dense rosulatis ascendentibus lanceolatis acuminatis obscure lineatis parce albo-maculatis facie deorsum planis apice concavis dentibus marginalibus ascendentibus magnitudine mediocribus, pedunculo simplici foliis paulo longiore, racemo oblongo denso, pedicellis cernuis flore æquilongis, bracteis ovatis magnis, perianthii cylindrici pallide rosei apice viriduli lobis tubo longioribus, genitalibus breviter exsertis.

A. Bakeri, *Hook. f.*, *mss.*

This new *Aloe* was raised by Mr. R. Irwin Lynch, A.L.S., Curator of the Cambridge Botanic Garden, from seeds sent from Abyssinia by Dr. Schinz, of Zurich. It was grown at Cambridge, under the name of *Aloe Schimperi*, but is totally different from that species. It comes nearest the well-known Cape species *Aloe obscura* of Miller (*A. picta*, Thunb., *ex parte*; Sims in Bot. Mag. t. 1323), but differs by its sparingly-spotted leaves, shorter pedicels and smaller pale red flowers, with lobes longer than the tube. Amongst the Abyssinian species its nearest affinity is with *A. macrocarpa*, Todaro, and *A. commutata*, Todaro.

Descr.—Acaulescent. *Leaves* many, in a dense rosette, ascending, lanceolate-acuminate, under a foot long, two and a half inches broad low down, sparingly spotted with white, obscurely lineate, flat on the lower part of the face, concave towards the point; marginal teeth pale, ascending, moderately large and close. *Peduncle* simple, rather longer than the leaves. *Raceme* dense, oblong, three or four inches long; pedicels cernuous, the lower as long as the flowers; bracts ovate, rather shorter than the pedicels. *Perianth* cylindrical, pale, red tipped with green, under an inch long; lobes linear-oblong, longer than the tube. *Stamens* and *style* a little longer than the perianth.—*J. G. Baker.*

Fig. 1, a flower; 2, front view of anther; 3, back view of anther; 4, pistil:—*all enlarged*; 5, whole plant, *much reduced.*

MAY 1ST, 1902.

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TAB. 7835.

EUCALYPTUS CORDATA.

Native of Tasmania.

Nat. Ord. MYRTACEÆ.—Tribe LEPTOSPERMEÆ.

Genus EUCALYPTUS, *L. Hér.*; (*Benth. & Hook.f. Gen. Plant.* vol. i. p. 707.)

EUCALYPTUS (Normales) *cordata*; frutex v. arbor parva, foliosa, albo-glauca, cortice tenui, ramulis erectis tetragonis rigidulis, foliis 3–4 poll. longis oppositis sessilibus orbicularibus v. late ovato-rotundatis crenulatis apiculatis basi subcordatis rigidulis utrinque concoloribus nervis gracillimis patulis, pedunculis axillaribus brevissimis 2–4-floris, floribus majusculis sessilibus, calyce hemispherico v. late campanulato ad ⅓ poll. diam. basi rotundato glauco-viridi punctulato ore aperto margine acuto sub lente crenulato, operculo calycis tubo breviore depresso-conico v. hemispherico albo roseo suffuso, staminibus calyci æquilongis filamentis æstivatione inflexis, antheris minutis fere globosis glandula dorsali magna, loculis parallelis, stylo brevi crassiusculo, stigmate simplici, fructu calyci consimili sed paullo majore crasse coriaceo, capsulæ valvis immersis parvis trigonis.

E. cordata, *Labill. Pl. Nov. Holl.* vol. ii. p. 13, t. 152. *DC. Prodr.* vol. iii. p. 221 (in part). *Hook. f. Fl. Tasman.* vol. i. p. 132. *Benth. Fl. Austral.* vol. iii. p. 224. *F. Muell. Eucalyptogr.* dec. viii.

The nearest ally of *Eucalyptus cordata* is *E. pulverulenta*, Sims, tab. 2087 of this work, where *E. cordata* is doubtfully referred to it. Both these species have opposite, sessile, cordate, semi-amplexicaul, farinaceous leaves and branches, and normally ternate flowers on very short peduncles; they differ in the leaves of *E. cordata* being crenulate, and the calyx-tube rounded at the base, whereas the leaves of *E. pulverulenta* are entire or obscurely crenulate, and the calyx-tube narrowed at the base; moreover, the first is confined to Western and Southern Tasmania, the latter to New South Wales.

The plant of *E. cordata*, from which our figure is taken, was raised from seed sent to the Royal Gardens, Kew, by Mr. Abbott, of the Hobarton Botanic Gardens, Tasmania, in 1901. It is now a pyramidal tree fifteen feet high, which flowers annually in autumn in the Mexican House.

The species has been grown out of doors in various parts especially of the south of England, and as far north as the Isle of Arran in the Clyde. I remember a plant of it

MAY 1ST, 1902.

trained against a wall at Kew more than fifty years ago, of which there is a specimen in the Kew Herbarium, gathered in 1851. It had a remarkable appearance, and was visible from a very great distance. It was killed eventually by frost.

Descr.—A shrub or small, leafy, mealy, glaucous-white tree, with strict, erect, stiff, four-angled branches; bark thin. *Leaves* sessile, opposite, three to four inches long, orbicular or ovate-rotundate, apiculate, crenulate, thinly coriaceous, concolorous, base sub-cordate; nerves very inconspicuous, spreading. *Peduncles* very short, axillary, three- rarely two- or four-flowered; flowers rather large, sessile. *Calyx* hemispheric, or broadly campanulate, about one-third of an inch in diameter, smooth, glaucous-green, punctulate, mouth open, margins thin, minutely crenulate. *Operculum* shorter than the calyx, depressed-conical or -hemispheric, smooth, white suffused with red. *Stamens* inflexed in bud; filaments about as long as the calyx; anthers minute, with a large dorsal gland, cells parallel. *Style* short, stout; stigma simple. *Fruit* rather larger than the flowering calyx, smooth, coriaceous; valves of the capsule trigonous, immersed.—*J. D. H.*

Fig. 1 and 2, stamens; 3, section of calyx showing the ovary:—*all enlarged*:—4, fruit of the *natural size*.

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M.S.del J.N.Fitch lith

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TAB. 7836.

HONCKENYA FICIFOLIA.

Native of tropical Africa.

Nat. Ord. TILIACEÆ.—Tribe TILIEÆ.

Genus HONCKENYA, *Willd.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 235).

HONCKENYA *ficifolia*; frutex v. arbor parva, stellato-pubescens, ramis robustis, cortice fusco, foliis breviter petiolatis amplis late oblongo v. ovato-rotundatis 3–7-lobatis crenato-dentatis, lobis latis obtusis basi 3–7-plinerviis supra læte viridibus scaberulis subtus tomentellis pallidis, petiolo robusto supra concavo dorso rotundato, stipulis parvis lanceolatis caducis, floribus amplis 2–3-nis v. subracemoso-paniculatis roseis, sepalis 4–5 linearibus petaloideis, petalis sepalis æquilongis orbiculatis late unguiculatis, staminibus 8–10 filamentis filiformibus inæquilongis antheris variis aliis sagittato-bilobis aliis minoribus, loculis parallelis, staminodiis perplurimis confertis staminibus brevioribus inferne filiformibus suberectis superne in clavellam angustam elongatam auream glaberrimam desinentibus, ovario 4–6-loculari, loculis multiovulatis, stylo simplici, stigmate denticulato, capsula oblonga echinata loculicide 4–6-valva polysperma, seminibus horizontalibus compressis, testa crustacea membrana tenui involuta.

H. ficifolia, *Willd. in Usteri, Delect. Opusc. Bot.* vol. ii. (1793) p. 201, t. 4; *et Sp. Pl.* vol. ii. p. 325. *DC. Prodr.* vol. i. p. 506. *Oliver, Fl. Trop. Afr.* vol. i. p. 260.

Clappertonia ficifolia, *Decne. in Deless. Ic Sel. Pl.* vol. v. p. 1, t. i. *Walp. Ann.* vol. i. p. 110.

Honckenya ficifolia is a common West African shrub or small tree, found in watery situations, from Senegambia to Angola, which has also been collected in the Niam Niam country, in Central Equatorial Africa, by Dr. Schweinfurth. According to Sir Cornelius Moloney, K.C.M.G., who, when Governor of Lagos, sent specimens from that colony to Kew, it is there known under two names; one the Bolo-bolo plant, the word meaning slippery, in allusion to a slippery juice given out by the leaves when bruised; the other Agbourin Ilassa, or rope plant, from the use to which its fibrous bark is put by the Haussas.

There are probably several species of *Honckenya* in Western tropical Africa. One, *H. minor*, Baill. (Adans. x. 1872, 183), is described as a small shrub a foot high, with the habit of a *Triumfetta*, and leaves an inch to an inch and a half long. There are specimens in Kew Herbarium of what appears to be a third species, of still smaller size,

from Monrovia (Krause), and from dry places in Sierra Leone (G. F. Scott Elliot); it has leaves glabrous on both surfaces, except for a few scattered bristles, and bears the name of *H. parva*. Oliver, in Fl. trop. Afr. l. c., mentions a possible new species collected by Afzelius, and preserved in the British Museum, with whip-like branches, and leaves not exceeding one inch long. Seeds of *Honckenya ficifolia* were sent to the Royal Gardens, Kew, in 1898, by Mr. Millen, when he was in charge of the Lagos Gardens, plants raised from which flowered in a stove in September, 1901.

Descr.—A stellately pubescent shrub, or small tree, rarely twenty feet high, with stout branches, and fibrous brown bark. *Leaves* very variable, shortly, stoutly petioled, two to four inches long, broadly oblong or ovate-oblong, variously but not deeply three- to seven-lobed, base cordate, three- to seven-nerved; lobes rounded, obtuse, coarsely crenate, scaberulous above, beneath softly, appressedly tomentose; stipules lanceolate, caducous. *Flowers* sub-solitary, or in short racemes, shortly pedicelled, two to three inches broad. *Sepals* four or five, linear, one and a half to two inches long, petaloid, pubescent. *Petals* as long as the sepals, orbicular, broadly clawed, purplish pink. *Stamens* eight to ten. *Filaments* very unequal, some nearly as long as the petals, puberulous. *Staminodes* very many, multiseriate, erect, filiform, puberulous, with clavate, glabrous, yellow tips. *Ovary* six- to eight-celled, cells many-ovuled; style simple, stigma six- to eight-toothed. *Capsule* an inch long or less, oblong, echinate all over, loculicidally six- to eight-valved, many-seeded. *Seeds* horizontal, sub-orbicular, compressed. —*J. D. H.*

Fig. 1, receptacle with stamens, staminodes, and ovary; 2, 3, and 4, anthers; 5, staminodes:—*all enlarged.*

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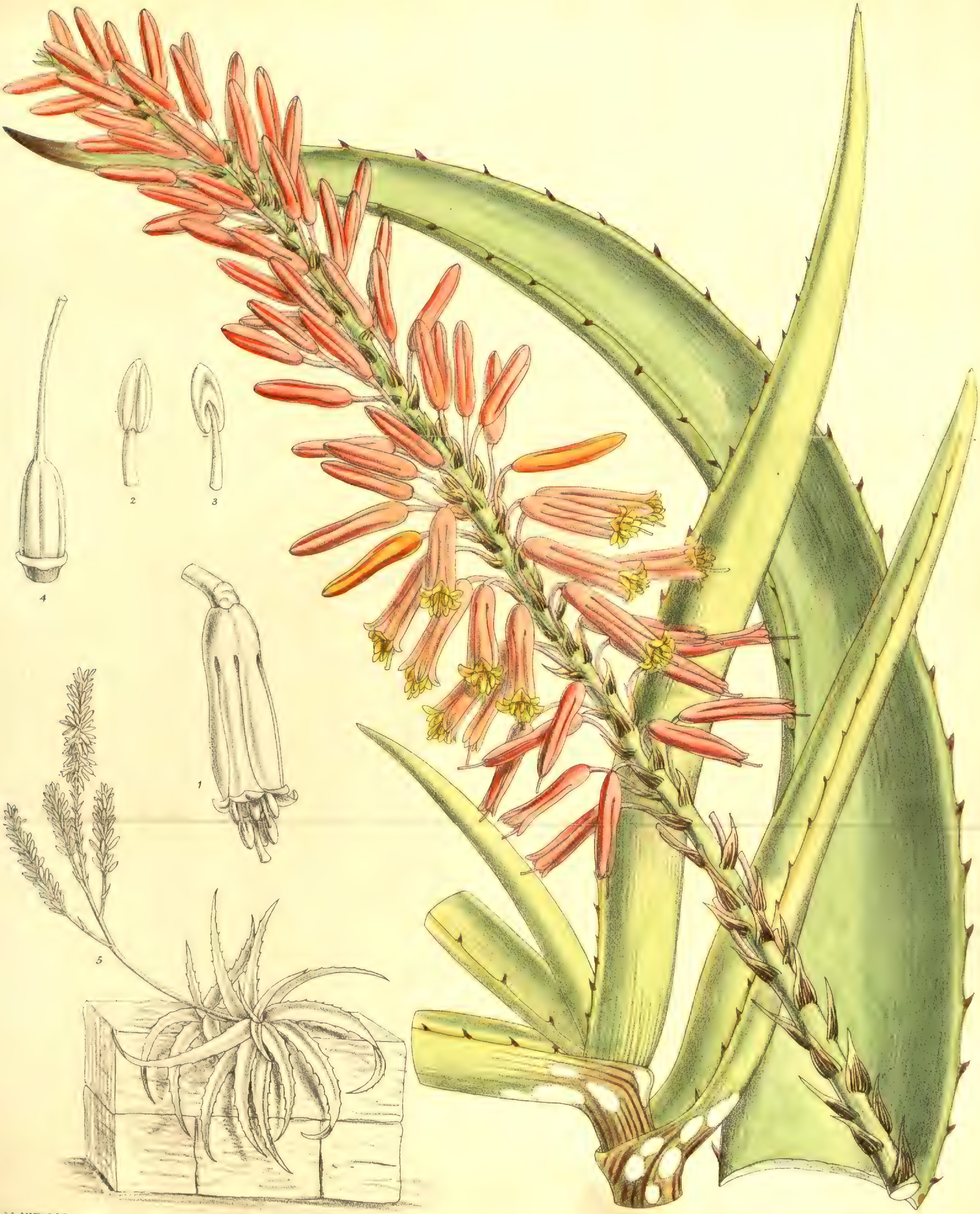

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TAB. 7837.

ALOE PENDENS.

Native of Arabia.

Nat. Ord. LILIACEÆ.—Tribe ALOINEÆ.

Genus ALOE, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 776.)

ALOE *pendens*; fruticosa, sobolifera, pendula, foliis subdistichis deflexis et patenti-recurvatis anguste ensiformibus sensim acuminatis ima apice subteretibus integris supra leviter turgidis subtus inferne valde convexis læte viridibus, dentibus parvis remotis deltoideis, scapo adscendente gracili 3-4-ramoso, racemis elongatis cylindraceis, pedicellis bracteis late ovatis acuminatis striatis longioribus, perianthii cylindracei subtrigoni luteo-rubri segmentis parvis ovatis tubo triplo longioribus.

A. pendens, *Forsk. Flor. Ægypt. Arab. Descr.* p. 74. *Baker in Journ. Linn. Soc.* vol. xviii. p. 181. *Engler, Notizbl. Berl. Bot. Gart.* vol. i. p. 5 (1897).

I am indebted to my old friend Sir Thomas Hanbury, F.L.S., for specimens of the very interesting Aloe here figured, together with a photograph, and excellent description drawn up from the living plant by his Curator, Mr. Alwin Berger. It is a native of Southern Arabia, where it was discovered by Forskål growing on rocks at Hadjeh. It has been collected by Schweinfurth on Djebel Bura, at about three thousand feet elevation. The plant from which the figure is taken was received by Sir T. Hanbury from the Botanical Gardens of Berlin, and it flowered at the Palazzo Orengo, Mortola, for the first time in March, 1902.

Mr. Berger remarks that in his opinion its nearest allies are the Arabian *A. inermis*, Forsk., and two South African species, *A. microstigma* and *A. consobrina* of Salm Dyck, all related by their small, cylindric flowers in elongate racemes, and narrow, ensiform, often spotted leaves. He observes that Forskål describes the flowers as of a yellow colour, and feels convinced that this is the case only in plants growing in shady places, as may be seen under such conditions, both in Naples with Mr. C. Sprenger, and in the Botanic Garden at Palermo.

Descr.—Shrubby; suckers many. *Stem* solitary, about sixteen inches long, and an inch and a quarter in

diameter, pendent; bark scaly; internodes about a inch long. *Leaves* seventeen to eighteen inches long, b one and a half to two inches broad, and three-quarters of an inch thick towards the base, patent, deflexed and recurved, very fleshy, narrowly ensiform, acuminate, slightly turgid above, convex beneath, margin very narrowly horny and reddish or yellow; teeth four to six-tenths of an inch apart, small, deltoid, about one-tenth of an inch long, tip edentate for two and a half to three inches, terete or semi-terete; leaves of young shoots distichous, on older branches convex on both surfaces, especially towards the base, sheath spotted and striped with white. *Inflorescence* about thirty inches long; scape ascending, slender, twice or thrice branched; scales few, deltoid. *Racemes* erect, cylindric, many-flowered, about six to eight inches long and two broad, the terminal longer; pedicels five to six-tenths of an inch long, erecto-patent; bracts shorter, deltoid, ovate, acute, marcescent. *Flowers* drooping, nearly an inch long, cylindric, sub-trigonous, not constricted, dull yellowish-red; segments connate for one-third their length, yellow within, tips slightly recurved, with paler margins, and three dark central streaks. *Stamens* and *style* very shortly exserted.
A. Berger.

Fig. 1, flower; 2 and 3, stamens; 4, pistil; *all enlarged*; 5, *reduced* view of whole plant from a photograph.

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TAB. 7838.

EURYOPS SOCOTRANUS.

Native of Socotra.

Nat. Ord. COMPOSITÆ.—Tribe SENECIONIDEÆ.

Genus EURYOPS, *Cass.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 452.)

EURYOPS *socotranus*; suffrutex 3-pedalis, glaberrimus, dichotome ramosus, ramis robustis foliorum basibus persistentibus tessellatim cicatricatis, ramulis herbaceis, foliis cum petiolis 2–2½ poll. longis sparsis v. ad apices ramulorum confertis 3- rarius 4-partitis in petiolum gracilem plano-compressum angustatis, segmentis anguste linearibus obtusis 1-nerviis sinubus acutis læte viridibus, capitulis axillaribus solitariis vel in corymbos foliosos terminales aggregatis, pedunculis folia æquantibus gracillimis nudis, involucri hemispherici basi nudi, bracteis 8–10 oblongis erectis ad medium connatis apicibus rotundatis herbaceis, receptaculo foveolatim dentato, fl. radii ad 12 tubo brevi ligula ½ poll. longa lineari-oblonga revoluta aurea apice 3-crenata, fl. disci croceis brevibus tubo superne late campanulato 5-fido, antheris exsertis, achæniis oblongis compressis pubescentibus, pappi setis brevibus hirsutis.

E. socotranus, *Balf. fil. in Proc. Roy. Soc. Edinb.* vol. xi. (1882) p. 841; *Bot. Socotr.* p. 141, t. xli.

The genus *Euryops* is a large one in South Africa, from which country it extends northwards through tropical Africa to Abyssinia and Arabia. One species alone has hitherto appeared in this magazine, namely, *E. pectinatus*, Cap. (*Othonna pectinata*, Linn., tab. 306), a handsome conservatory plant, with snow-white cottony foliage, introduced in 1731, and still flourishing in the Cape House at Kew. The genus is closely allied to *Senecio*, differing chiefly in the pappus and connate involucral bracts.

E. socotranus was found in the higher regions of Mt. Haghier, in Socotra, by Dr. I. B. Balfour, F.R.S., when on his memorable expedition to that island in 1880, the botanical riches of which he was the first to describe. It has also been collected by Dr. Schweinfurth on Wadi Kischer. The specimen figured was raised in the Royal Botanic Garden of Edinburgh, from seeds brought by Dr. H. O. Forbes, now Curator of the Public Museum, Liverpool, who visited Socotra in 1898-9. It differs from the native specimens in having rather distant, scattered, much longer leaves and long branchlets, which do not show the curiously tessellated character of those of the native plant, so well illustrated in Dr. Balfour's figure, in which also the leaves are crowded at the end of the branches. The flower-heads, too, are twice the size of those of native specimens. These differences are the effects of the widely diverse conditions of the plant on the arid scorched rocks of its island home, and in the temperate warmth and moisture of a house in Scotland.

Descr.—A glabrous, dichotomously branched undershrub, about three feet high; bracts woody, closely tessellately scarred. *Leaves* two to two and a half inches long, narrowed below into a long, flattened petiole, three- rarely four-partite; segments narrowly linear, obtuse, one-nerved, bright green. *Heads* axillary, solitary, or in terminal corymbs; peduncles slender, as long as the leaves. *Involucre* hemispheric, ecalyculate; bracts eight to ten, oblong, erect, connate to the middle, tips rounded, herbaceous. *Receptacle* minutely toothed. *Ray-flowers* about twelve; tube short; ligule half an inch long, linear-oblong, recurved, golden-yellow. *Disk-flowers* orange-yellow, five-lobed, tube broadly campanulate above the middle; anthers exserted. *Achene* oblong, compressed, pubescent; pappus short, bristles hirsute.—*J. D. H.*

Fig. 1, ray-flower; 2, disk-flower; 3, hairs of pappus; 4, stamens; 5, style-arms of disk-flower:—*all enlarged.*

M. S. del, J. N. Fitch lith.

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TAB. 7839.

ERANTHEMUM ATROPURPUREUM.

Native of the Solomon Islands.

Nat. Ord. ACANTHACEÆ.—Tribe JUSTICIEÆ.

Genus ERANTHEMUM, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1097).

ERANTHEMUM *atropurpureum*; suffrutex corollis exceptis glaberrimus, ramis tetraquetris, foliis ovatis oblongisve obtuse acuminatis basi acutis supra atropurpureis nitidis subtus pallide virescentibus purpureo tinctis, nervis utrinque ad 8 supra impressis subtus costaque prominulis purpureis, petiolo brevi, floribus in paniculam spiciformem oblongam erectam 6-pollicarem dispositis, ramulis paniculæ brevissimis oppositis multi-densifloris, pedicellis calyce brevioribus, bracteolis subulatis, calycis $\frac{1}{6}$ poll. longi segmentis lanceolatis, corollæ tubo pollicari gracili fere recto albo intus pubescente, limbi segmentis tubo paullo brevioribus albis basi roseis lineari-oblongis obtusis ciliatis, 2 superioribus erectis 3 inferioribus deflexis, antheris exsertis, loculis basi rotundatis ecalcaratis, disco tubuloso, ovario glaberrimo in stylum gracilem attenuato, stigmatibus minutis.

E. atropurpureum, *Hort. Bull. ex Gard. Chron.* 1875, vol. i. p. 619.

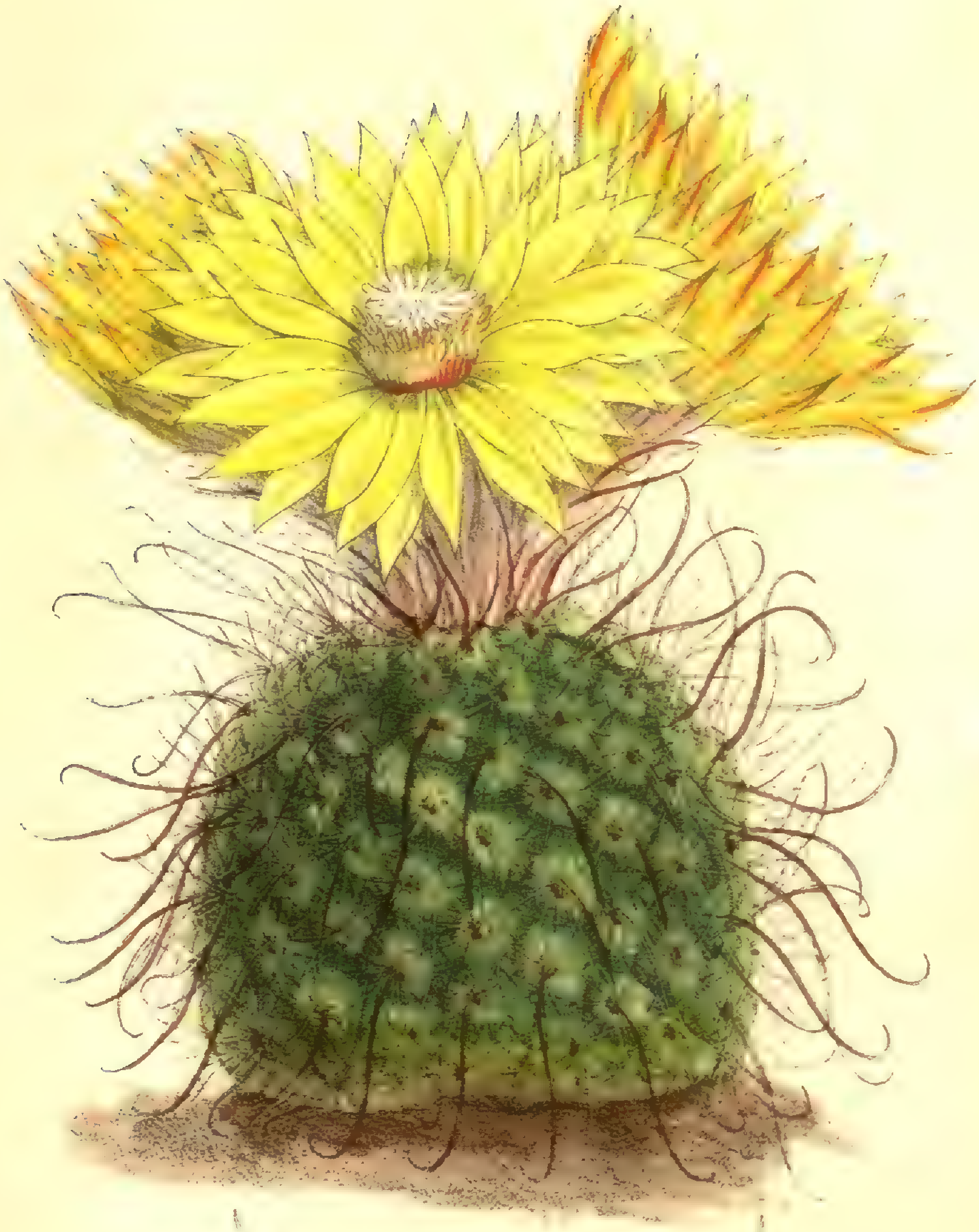
The flowering of this well-known stove plant is a rare occurrence, though it has been in cultivation for upwards of a quarter of a century. It is one of the many new and interesting novelties procured from the Pacific Islands by Mr. Charles Moore, F.L.S., when Director of the Botanical Gardens of Sydney, New South Wales, and which were imported by and distributed from the Royal Gardens, Kew. It is said to be a native of the Solomon Islands.

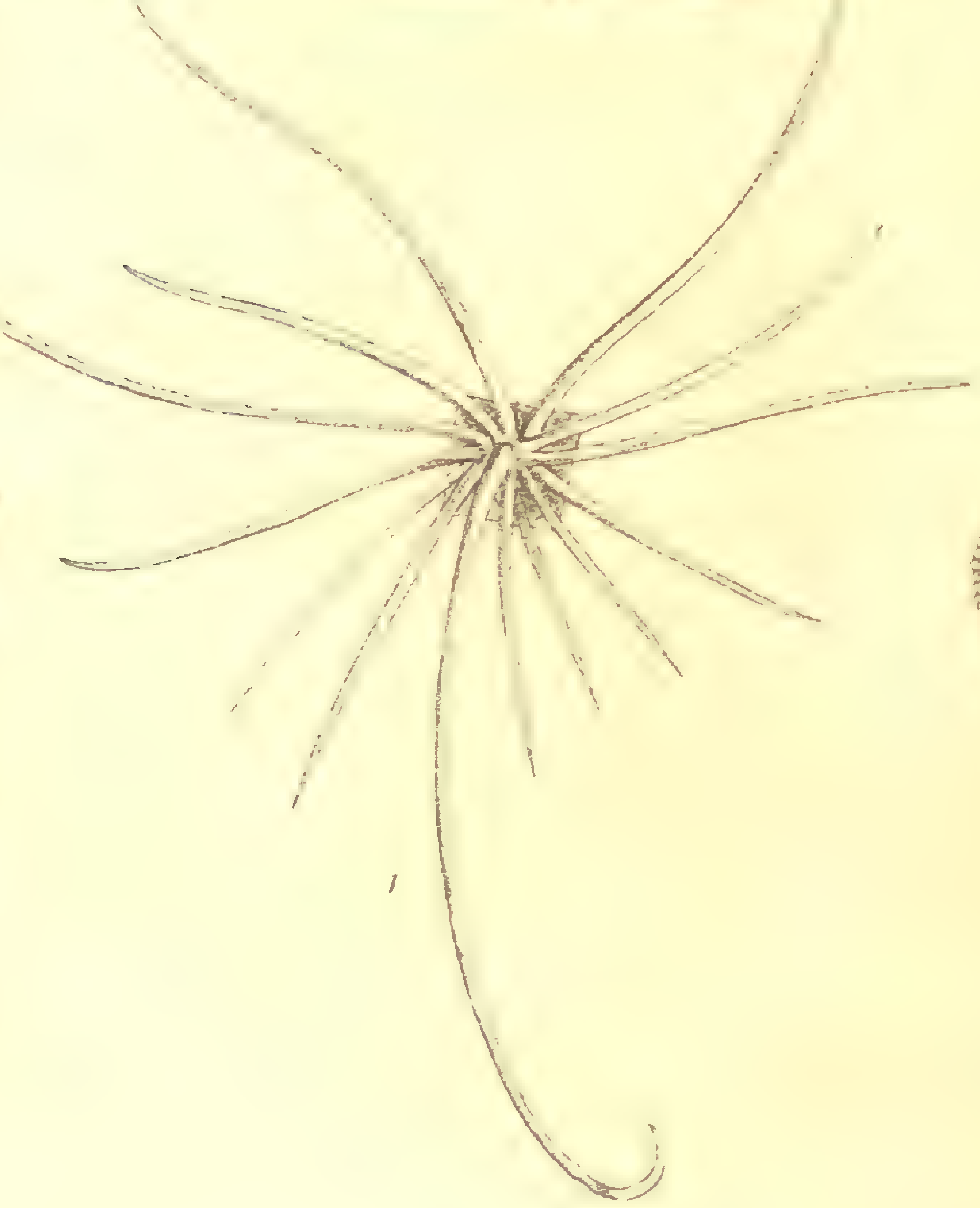
Two other species, probably allied to *E. atropurpureum*, have been recorded from the Solomon Islands; but the descriptions of them are so meagre, being founded chiefly on the coloration of the leaves (their flowers being unknown) that they have little claim to specific rank. One is *E. nigrum*, Lind. Ill. Hortic. vol. xxvii. (1880), 165, t. 404, with terete branches and nearly black foliage; the other, *E. Moorei*, Hort Bull., having leaves with a mottled green centre and a broad yellowish margin. Other allied species are *E. Whartonianum*, Hemsl. in Kew Bullet. 1894, p. 214, and *E. pacificum*, Engl. Jahrb. vii. p. 475, which is perhaps *E. nigrum*.

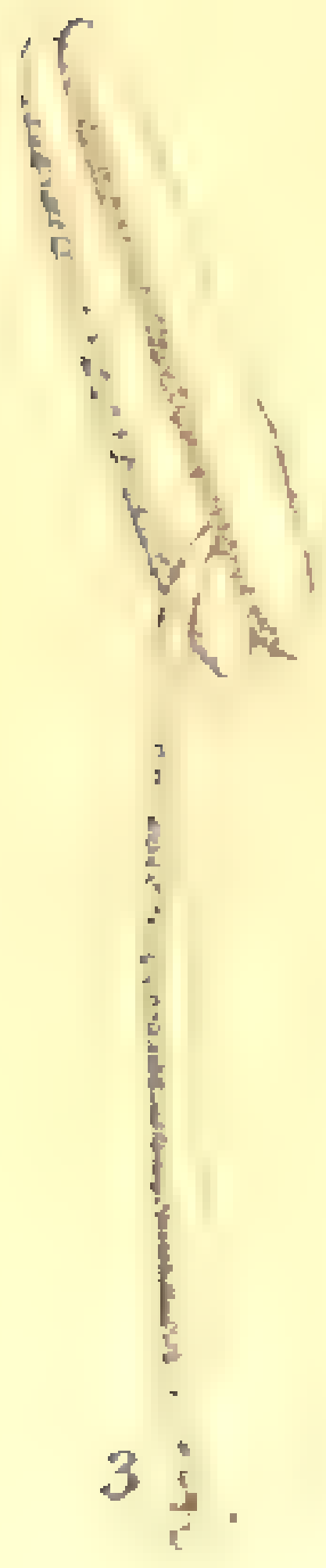
The specimens of *E. atropurpureum* here figured flowered in a stove of the Royal Gardens, Kew, in July 1900.

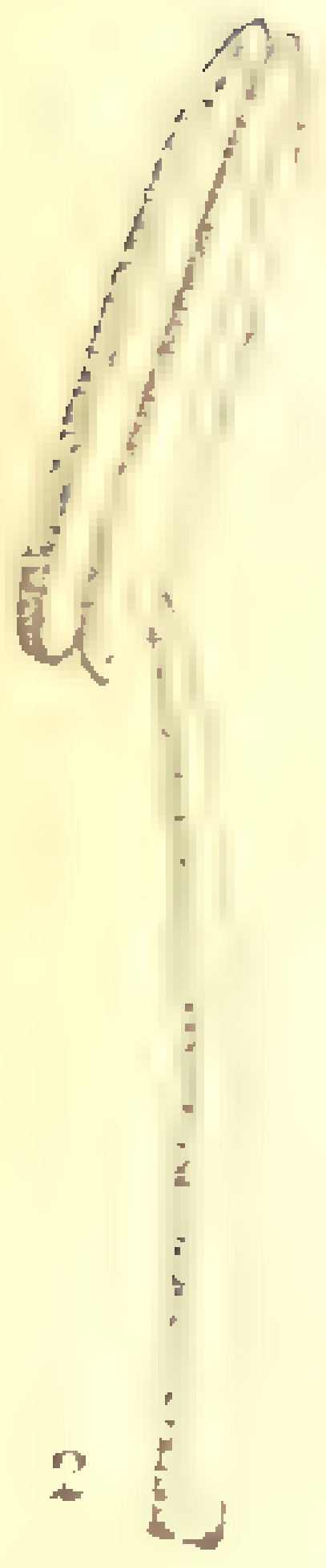
Descr.—A glabrous, leafy shrub; branches erect, acutely four-angled. *Leaves* four to six inches long, ovate or oblong, obtusely acuminate, base acute, very dark red-purple and shining above, pale green, tinged with purple beneath; nerves about eight on each side, purple beneath; petiole short. *Panicles* six inches long, erect, spiciform; branches very short, many- and dense-flowered; pedicels shorter than the calyx; bracts subulate. *Calyx* one-sixth of an inch long, segments lanceolate. *Corolla-tube* an inch long, straight, slender, white; lobes rather shorter than the tube, linear-oblong, obtuse, white, rose-coloured at the base, ciliate, two upper erect, three lower deflexed. *Anthers* exserted, base rounded, ecalcarate. *Disk* short, tubular. *Ovary* glabrous, narrowed into a slender style; stigmas minute.—*J. D. H.*

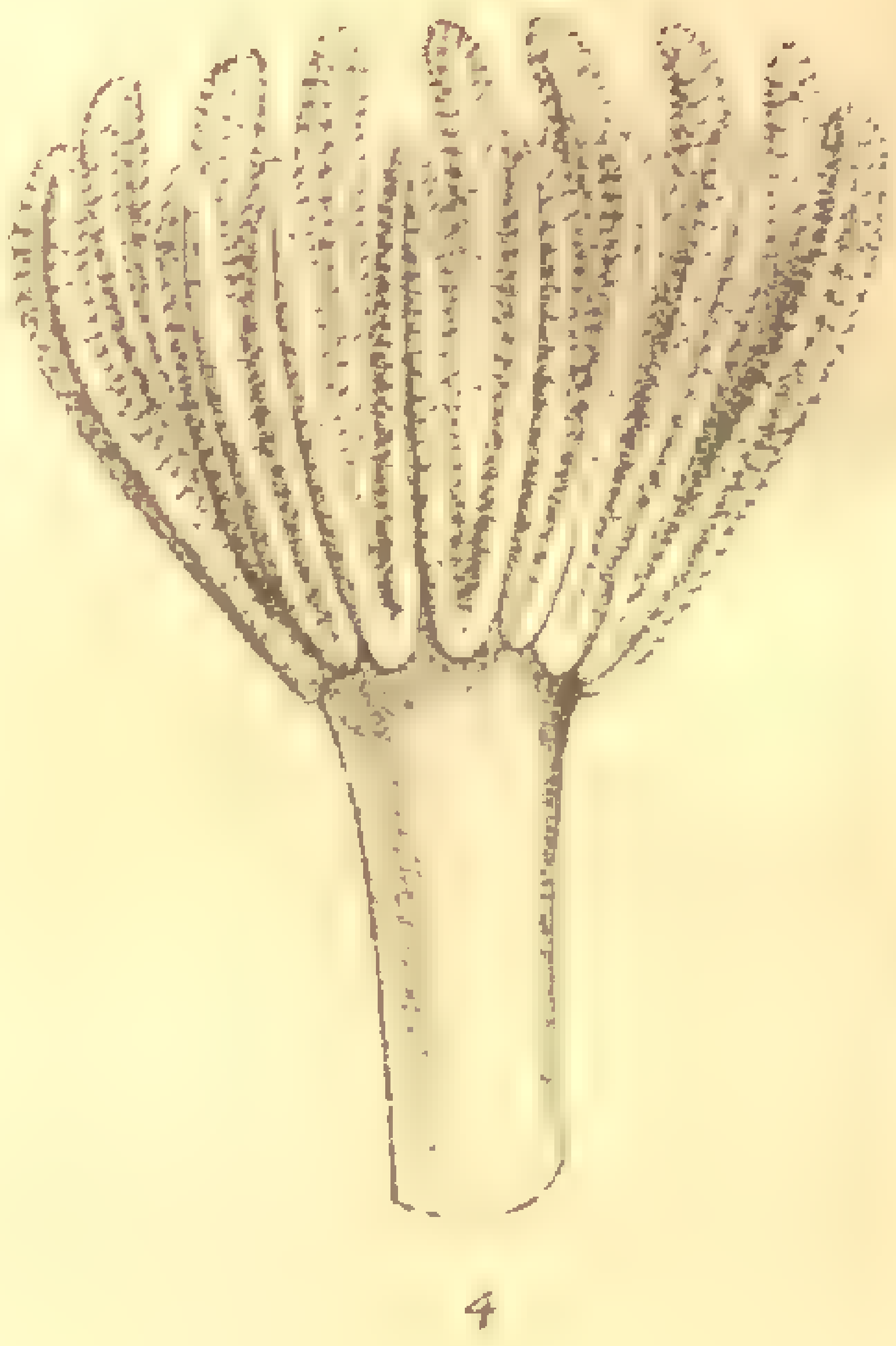
Fig. 1, bracts, calyx, style and stigma; 2, bud laid open; 3, dorsal view of stamen; 4, disk and ovary:—*all enlarged.*











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Tab. 7840.

ECHINOCACTUS MICROSPERMUS.

Native of Argentina.

Nat. Ord. Cacteæ.—Tribe Echinocacteæ.

Genus Echinocactus, *Link & Otto*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 848.)

Echinocactus *microspermus*; caule hemispherico v. subgloboso 2–4 poll. diam. ecostato viridi mamillato, mamillis spiraliter dispositis liberis depresso-hemisphericis obscure hexagonis ad ⅓ poll. diam. lævibus glabris, areolis glabris, spinis externis radiantibus 10–14 inæquilongis ⅕–⅓ poll. longis gracilibus albis, centrali ½–⅔ poll. longa gracillima sigmoideo decurva apicem versus plus minusve hamata fusco-rubra, floribus numerosis fere 2 poll. diam., calycis tubo pollicari piloso et aculeato, sepalis petalisque multiseriatis lineari-lanceolatis acuminatis aureis aurantiacisve, ovario squamoso et lanuginoso, stigmatis flavi lobis ad 15 linearibus, seminibus numerossimis minutis.

E. microspermus, *Weber in Bois, Dict. D'Hort.* p. 469. *Schum. Monatsschr. für Kakt.* vol. vii. (1897), p. 104, *cum ic.*; *Gesamtbeschr. Kakt.* p. 397, f. 68; *Blühend. Kakt.* t. 1.

A very distinct and attractive species of the immense genus *Echinocactus*, well figured by Schumann, both in his *Monatsschr.* by a woodcut, and in his *Bluehender. Kakt.* by a beautiful coloured plate. It is a native of Catamarca, a district in the province of Tucuman, in Northern Argentina, to the south of the great mountain of Aconcagua, whence it was sent by Mr. Schickendantz. The seeds, which I have not seen, are described as being so small as to resemble a powder.

The plant figured was procured by purchase. It flowered in a frame of the Royal Gardens, Kew, in September, 1901.

Descr.—*Stem* hemispheric or sub-globose, two to four inches in diameter, dark green, ecostate, mamillate. *Mamillæ* spirally disposed, very regular, about one-third of an inch in diameter, depressed hemispheric, very obscurely hexagonal, smooth, quite glabrous. *Outer spines* ten to fourteen, radiating, slender, very unequal in length, a fifth to a third of an inch long, straight or flexuous, white; central one half to two-thirds of an inch long, very slender, decurved, hooked towards the tip, red-brown,

June 1st, 1902.

sometimes sigmoidly flexuous. *Flowers* many, crowded at the top of the stem, golden- or orange-yellow, nearly two inches in diameter. *Calyx-tube* about an inch long, hairy and sparsely aculeate. *Sepals* and *petals* very many, in many series, linear-lanceolate, acuminate. *Filaments* short, reddish, anthers yellow. *Ovary* scaly and woolly, stigmatic lobes about fifteen, pale yellow. *Seeds* very numerous and very minute.—*J. D. H.*

Fig. 1, spines of one areola ; 2 and 3, stamens ; 4, stigmas :—*all enlarged.*

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TAB. 7841.

PLECTRANTHUS SACCATUS.

Native of Natal.

Nat. Ord. LABIATÆ.—Tribe OCIMOIDEÆ.

Genus PLECTRANTHUS, *L'Hér.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1175.)

PLECTRANTHUS (Germanea) *saccatus*; caule suffruticoso, ramis patulis pedalibus herbaceis tetragonis foliisque crassiusculis patentim pilosis, foliis 2–3 poll. longis late ovatis rhomboideisve grosse crenatis utrinque pilosis basi cuneatis v. truncatis floralibus minutis, racemis laxifloris simplicibus, verticillastris 2–4-floris, pedicellis $\frac{1}{4}$–$\frac{1}{3}$ poll. longis fusco-rubris, calycibus minutis late campanulatis hirtellis, dentibus acutis, supremo ovato lateralibus subulatis inferioribus ovatis acutis, corollæ azureæ tubo $\frac{2}{3}$ poll. longo inflato compresso basi gibboso intus ciliato, ore angusto, labio superiore maximo erecto semicirculari apice emarginato basi subhastatim truncato lobis lateralibus brevibus rotundatis, labio inferiore parvo oblongo obtuso concavo deflexo, filamentis liberis, antherarum loculis ovoideis divaricatis.

P. saccatus, *Benth. in E. Mey. Comment.* p. 227; *in DC. Prodr.* vol. xii. p. 62. *Wood, Cat. Plant. Natal. Bot. Gard.* (1890) p. 59; *Prelim. Cat. Indig. Natal Pl.* (1894) p. 28.

Plectranthus saccatus is much the largest-flowered species of the genus known to me, which character and the lovely azure blue of the corolla render it a very ornamental plant. Mr. Lynch, to whom I am indebted for the specimen figured, describes it as remarkable for the horizontally spreading branches, about a foot long, the succulent stem and leaves, and for the manner in which the leaf-blades are brought into the best position for the incidence of light by the action of the petioles. It is a native of Natal, where it was discovered by the Collector Drège in 1836, at Omsamwubo or St. John's River, a place I do not find in any map. There is a single specimen of it, numbered 4777 of Drège's Catalogue, in the Kew Herbarium, but none from any subsequent collector. A living plant of it was received at the Botanical Gardens of the University of Cambridge, from Mr. J. Medley Wood, A.L.S., Curator of the Natal Botanical Gardens, in 1899, which flowered in October, 1901. According to Wood's Catalogue of the Indigenous Plants of Natal, it affects elevations of from

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one thousand to three thousand feet. The stem is erroneously described as procumbent by Bentham.

Descr.—Suffruticose, sparsely hairy on the stem and leaves, rather succulent; branches about a foot long, horizontally spreading. *Leaves* two to three inches long, broadly ovate or rhombic, coarsely crenate, laxly hairy on both surfaces, base cuneate or truncate; floral small. *Racemes* erect, simple, rhachis stout, obtusely four-angled; whorls two- to four-flowered; pedicels a fourth to a third of an inch long, red-brown. *Calyx* minute, broadly campanulate, two-lipped, five-toothed; upper tooth broadly ovate, lateral and two lower very small, ovate, acute. *Corolla* large, pale blue; tube two-thirds of an inch long, inflated, compressed, gibbous at the base; upper lip erect, more than half an inch broad, semicircular, with a truncate, sub-hastate base, notched at the top; side lobes very narrow; lower lip small, oblong, obtuse, concave, deflexed. *Filaments* free, glabrous; anthers small, with ovoid, divaricate cells.—*J. D. H.*

Fig. 1, calyx and style; 2, interior of corolla-tube and stamens; 3 and 4, anthers; 5, disk and ovaries:—*all enlarged.*

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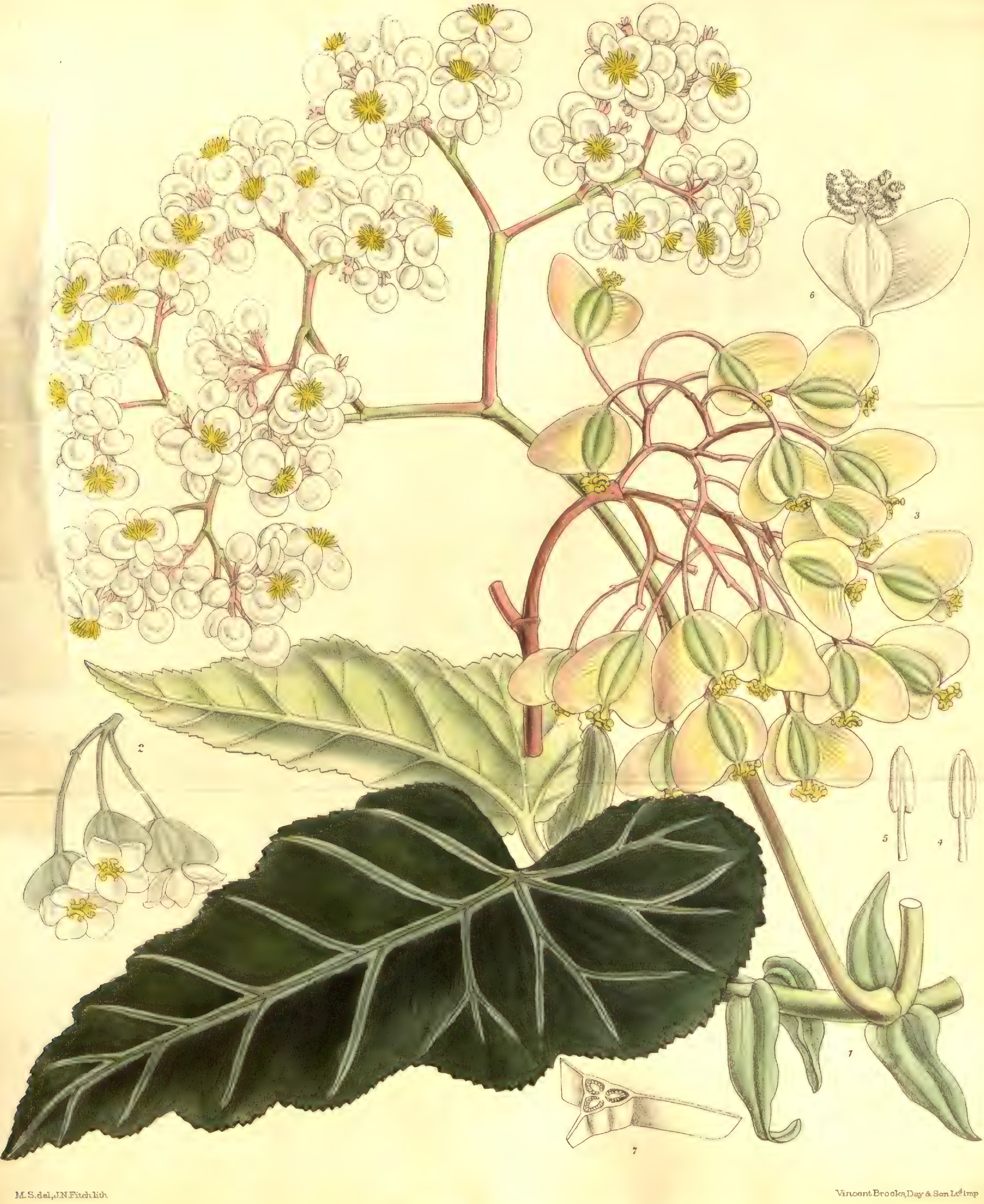

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TAB. 7842.

BEGONIA ANGULARIS.

Native of Brazil.

Nat. Ord. BEGONIACEÆ.

Genus BEGONIA, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 841.)

BEGONIA (Pritzelia) *angularis*; elata, robusta, ramosa, glaberrima, foliis 6–8-pollicaribus oblique ovato-lanceolatis subacutis basi bilobis lobo altero maximo rotundato altero rotundato v. truncato marginibus undulatis crenulatis basi 4–5-plinerviis dein penninerviis nervis crassiusculis, supra saturate viridibus secus nervos pallidioribus, subtus pallide viridibus roseisve, stipulis pollicaribus ellipticis acutis caducis, bracteis ad basin pedunculorum 1½-pollicaribus e basi cordata lanceolatis herbaceis persistentibus, pedunculis foliis multo longioribus roseis apice pluries dichotomis, bracteolis minutis, floribus ½–⅔ poll. latis capitellatis albis vel roseis, *fl. masc.*, sepalis 2 orbiculatis medio concavis, petalis triente minoribus oblongis, staminibus toro parvo sessilibus, antheris filamentis longioribus lineari-oblongis connectivo breviter excurrente obtuso, *fl. fœm.*, sepalis 4–5 orbiculatis, stigmatibus sessilibus late reniformibus undique papillosis, capsula ½ poll. longa 3-alata, ala dorsali oblique rotundata, lateralibus multo minoribus, placentis integris undique ovuliferis.

B. angularis, *Raddi in Mem. Moden.* vol. xviii. Fis. (1820) p. 407. *A.DC. in DC. Prodr.* vol. xv. pars I. p. 358; *in Mart. Fl. Bras.* vol. iv. pars I. p. 358.

B. crenulata, *Schott in Hort. Vindob. ex A.DC. l.c.*

B. zebrina, *Hort. Angl. ex Lond. Encyc. Pl. Suppl.* 2, p. 1506.

B. hastata, *Vell. Fl. Flum.* vol. x. t. 54?

Pritzelia zebrina, *Klotzsch, in Monatsb. Berl. Akad.* (Maerz, 1854) p. 126; *et in Abhandl. Akad. Berl.* (1855) p. 110, t. 103.

Though differing a little from A. de Candolle's excellent description in the smaller size of the petals of the male flower, and in the somewhat larger capsules, I cannot doubt this being Raddi's *Begonia angularis*, which is said (A.DC. l.c.) to have been introduced into English gardens in 1845 from San Gabriel, in the Sierra d'Estrella of Brazil. There are specimens of it in the Kew Herbarium from the Organ Mountains, collected by Burchell, and from Rio (probably the Organ Mountains) by Glaziou. Martius gives the Province of Rio de Janeiro and Minas Geraes; and A. de Candolle in the Prodomus cites Schott as its discoverer in 1822, at San Joao Marques.

B. angularis is a magnificent species, of shrubby habit. The plant from which the figure is derived is eight feet

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high. It is planted in a bed in the Mexican division of the Temperate House of the Royal Gardens, where it flowers freely throughout the year. It has been long in cultivation at Kew.

Descr.—*Stem* eight feet high, copiously branched, branches spreading or drooping, as thick as the little finger, green. *Leaves* six to eight inches long, obliquely ovate-lanceolate, unequally two-lobed at the base, very dark green above, paler along the nerves, pale green beneath, and sometimes suffused with red, margins undulate and crenulate; petiole rather short, stout; stipules one to one and a half inches long, ovate-lanceolate, herbaceous, green, persistent. *Peduncles* long, rather slender. *Flowers* in heads on the terminal branchlets of a very large repeatedly dichotomously branched panicle, white, about two-thirds of an inch in diameter; *male fl.*, sepals 2, orbicular, depressed in the middle; petals one-third as large, oblong; stamens crowded in a small receptacle, filaments very short, anthers linear-oblong, connective obtuse; *fem. fl.*, sepals 4–5, orbicular; stigmas sessile, broadly reniform, papillose all over. *Capsule* three-winged, an inch broad across the wings; dorsal wing obliquely rounded, lateral much shorter.—*J. D. H.*

Figs. 1 and 2, stamens; 3, fruit; 4, transverse section of ovary:—*all enlarged.*

M.S.del. J.N.Fitch lith.

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TAB. 7843.

MUSCARI LATIFOLIUM.

Native of Asia Minor.

Nat. Ord. LILIACEÆ.—Tribe SCILLEÆ.

Genus MUSCARI, *Mill.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 811.)

MUSCARI (Botryanthus) *latifolium*; bulbo parvo ovoideo, foliis 1–2, 6–12 poll. longis 1–2 poll. latis lineari- v. obovato-oblongis v. oblongo-lanceolatis subacutis planis basi angustatis scapum vaginantibus, scapo robusto foliis longiore viridi, racemo 3–4 poll. longo cylindraceo densifloro, floribus pendulis ¼ poll. longis saturate atro-violaceis supremis minoribus pallidioribus clausis neutris, bracteis minutis, perianthio oblongo suburceolato intus et extus glaucescente, lobis brevibus erectis concavis rotundatis dorso incrassatis demum recurvis, staminibus medio tubo insertis uniseriatis, antheris inclusis cæruleis, ovario ovoideo in stylum 3-lobum attenuato, capsula membranacea, seminibus compressis.

M. latifolium, *J. Kirk in Jameson Edinb. New. Phil. Journ.* vol. vi. (1858) p. 80; *in Trans. Bot. Soc. Edinb.* vol. vi. (1860) p. 30. *Boiss. Flor. Orient.* vol. v. p. 294. *Baker in Journ. Linn. Soc. Bot.* vol. xi. (1871) p. 415.

Bellevalia monophylla, *J. Gay ex Boiss. Fl. Orient.* v. p. 294.

B. muscaroides, *Masters in Journ. Linn. Soc. Bot.* vol. iii. (1859) p. 113.

Muscari latifolium was discovered and brought to Europe from Mt. Ida in Asia Minor by Dr. (now Sir John) Kirk, F.R.S., and Dr. Armitage, when employed in the military hospital at Renkioi, during the Crimean War. It has more recently been found in pine woods of the Mouraddagh Mts. in Phrygia and in the Troad. The specimen here figured differs greatly from the native ones, and from the descriptions of Kirk, Masters, Boissier and Baker, in its much larger size, the presence of two leaves, the longer raceme, and much larger flowers, differences probably all due to cultivation. The Royal Gardens, Kew, are indebted to those of Berlin for bulbs of this plant, received in 1886. Like most other species of the genus, it is an early flowerer.

Descr.—*Bulb* small, ovoid. *Leaves* one or two, six to twelve inches long, by one to two broad, linear- or obovate oblong or oblong-lanceolate, sub-acute, flat, narrowed to the sheathing base, bright green. *Scape* longer than the leaves, stout. *Raceme* three to four inches long, cylindric, dense-flowered. *Flowers* pendulous, about a quarter of an inch long, very dark violet-blue, uppermost smaller, erect, pale blue, neuter. *Perianth* oblong-urceolate, glaucescent; lobes short, erect, orbicular, concave, dorsally much thickened, at length recurved. *Stamens* inserted about the middle of the tube, uniseriate; anthers included, violet-blue. *Ovary* ovoid, narrowed into the style; stigma three-lobed. *Capsule* membranous. *Seeds* compressed.—*J. D. H.*

Fig. 1, flower; 2, portion of perianth laid open; 3, ovary:—*all enlarged.*

M.S.del, J.N Fitch lith

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TAB. 7844.

IMPATIENS CUSPIDATA.

var. ARTHRITICA.

Native of the Nilghiri Mts.

Nat. Ord. GERANIACEÆ.—Tribe BALSAMINEÆ.

Genus IMPATIENS, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 277.)

IMPATIENS (Uniflorae) *cuspidata*; fruticosa, fere glaberrima, ramis ramulis petiolisque cylindraceis niveo-farinosis, foliis alternis superioribus rarius oppositis longe petiolatis 3–5 poll. longis lanceolatis v. oblongo-lanceolatis acuminatis serrulatis flaccidis læte viridibus basi acutis v. angustatis, nervis valde obliquis subtus pilosulis, petiolis 1½–2 poll. longis setis sparsis glanduliferis auctis, glandulis stipularibus 0, pedunculis axillaribus 1-floris solitariis binisve petiolo longioribus ebracteolatis, sepalis 2 e basi ovata longe subulatis, corolla pallide rosea ⅝ poll. diam., vexillo erecto rotundato bifido dorso cornuto, alis vexillo paullo longioribus lobo basilari oblongo obtuso quam terminale oblique oblongum apiculatum triente breviore, labello cymbiforme acuto, calcare filiforme alis duplo longiore recto v. paullo incurvo apice non v. vix incrassato, capsula ⅝ poll. longa ovoidea utrinque attenuata glabra.

I. cuspidata, *Wight et Arn. in Hook. Comp. Bot. Mag.* vol. i. (1835) p. 321. *Wight, Ic. Pl. Ind. Or.* t. 741; *Cat.* n. 2242.

I. latifolia, *Linn. partim, Hook. f. & Th. in Journ. Linn. Soc.* vol. iv. (1860) p. 124; *Fl. Brit. Ind.* vol. i. p. 450.

I. flaccida, *Arn. partim, Hook. f. Fl. Brit. Ind.* i. p. 457.

Var. *arthritica*; nodis inferioribus valde incrassatis.

Though not in all respects agreeing with the description of *I. cuspidata* given by Wight & Arnott, or with Wight's tab. 741, I have no hesitation in referring to that species the plant here figured. It differs from both figure and description in the conspicuous snowy-white farina on the stem and branches, which give it a very remarkable appearance. There are several Peninsular, Indian and Ceylon species, to which it is closely allied, and with which it has been more or less confounded by Thwaites, in his "Enum. Plant. Zeyl." by myself in the "Flora of British India," and by Trimen in his "Handbook of the Ceylon Flora," all distinguished by the alternate exstipulate leaves, axillary one-flowered peduncles with no trace of bracts or bracteoles, cymbiform lip abruptly narrowed into the spur, and ellipsoid capsule narrowed (in all ?) at both ends. Such are *I. latifolia*, Bot. Mag. tab. 5625 (an Linn.?), *I. flaccida*, tab. 5276 (an Arn.?), *I. bipartita*, Arn., and *I. lucida*, Heyne, all requiring study with better material than has hitherto been available, but I think all distinct. From all these *I. cuspidata* differs in the snow-white stem and branches, &c., a character which escaped both White and Arnold.

Impatiens cuspidata is a native of Conoor in the Nilghiri Hills, at about five thousand feet elevation, where it was first found by Wight. It has been in cultivation in England since 1877, when specimens were sent by Messrs. Veitch to the Kew Herbarium. The plant here figured represents a most remarkable state of it, drawn in July, 1891, by Miss Smith, in a conservatory of the Royal Botanic Gardens, Edinburgh, in which the base of the stem was nearly an inch in diameter, the lower branches nearly as thick at the base, the upper with the nodes thickened and elongated into cylinders of a pale pinkish white colour, contrasting remarkably with the white internodes, and the upper nodes quite normal. I have given it the varietal name of *arthritica*, from its gouty appearance; but am disposed to regard it rather as a diseased condition, well worthy of study by a vegetable anatomist.

Descr.—A shrub four to five feet high, with spreading branches, covered with a snow-white farina, the lower nodes elongate, and thickened into cylinders of a pale reddish colour. *Leaves* alternate, or the uppermost opposite, three to five inches long, lanceolate or oblong-lanceolate, finely acuminate, serrulate, flaccid, bright green, base acute; nerves oblique, more or less pilose beneath; petiole slender, with a few soft, scattered, gland-tipped bristles. *Peduncles* solitary or binate, axillary, longer than the petioles, ebracteolate, quite naked, one-flowered. *Flowers* about an inch broad, very pale red. *Sepals* two, very small, ovate, narrowed into long, slender points, green. *Standard* orbicular, two-lobed, erect, with a dorsal horn. *Wings* two-lobed; terminal lobe obliquely oblong, apiculate, much larger than the oblong, deflexed basal one. *Lip* boat-shaped, acute, abruptly narrowed into a nearly straight, slender spur, about twice as long as the wings. *Capsule* ovoid, narrowed at both ends.—*J. D. H.*

Fig. 1, bud, showing sepal; 2, lip and spur; 3, petal:—*all enlarged*; 4, fruit, and 5, base of stem; both of *nat. size.*

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TAB. 7845.

CYNORCHIS VILLOSA.

Native of Madagascar.

Nat. Ord. ORCHIDEÆ.—Tribe OPHRYDEÆ.

Genus CYNORCHIS, *Thouars*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 628.)

CYNORCHIS *villosa*; herba erecta, inflorescentia glanduloso-villosa, radicibus crassis pilis atris comatis, caule brevi vaginis orbicularibus tecto, foliis paucis sessilibus 4–8 poll. longis elliptico-oblongis oblongo-lanceolatisve acutis acuminatis v. cuspidatis planis 7–∞-nerviis margine undulatis, scapo 8–10-pollicari erecto viridi glanduloso-villoso vaginis paucis 1–$1\frac{1}{2}$ poll. longis lanceolatis instructo, racemo spicæformi oblongo-cylindraceo 3–4 poll. longo obtuso densifloro, bracteis $\frac{1}{4}$–$\frac{1}{2}$ poll. longis ovato-lanceolatis ovarium strictum glanduloso-pubescentem æquantibus, pedicellis ad $\frac{1}{2}$ poll. longis villosis, perianthio $\frac{1}{2}$ poll. longo deflexo oblongo roseo, sepalis petalisque conniventibus, sepalis ovato-oblongis apiculatis concavis glanduloso-villosis, petalis minoribus auriculæformibus glabris, labello sepalis breviore glabro oblongo-panduræformi apice trilobo lobis rotundatis, calcare labello æquilongo obtuso inflato intus glanduloso, antherarum tubulis $\frac{1}{10}$ poll. longis rectis parallelis.

C. villosa, *Rolfe in Kew Bulletin, ined.*

Of the genus *Cynorchis*, which in the "Genera Plantarum," that is in 1883, was credited with about twelve species, there are now at least thirty in the Kew Herbarium, the majority of them from Madagascar, from which country, as from tropical Eastern Africa, a rich harvest of species is to be anticipated. Hitherto the genus, which is found as far South as Natal, has not been discovered in Western Africa. Only two have previously been figured in this work: one under the name of *C. purpurascens*, tab. 7551, which, as has lately been shown, is not the true plant, but should have borne the name *C. Lowiana*, which Reichenbach gave it; the other is *C. grandiflora*, Ridley, tab. 7564. A figure of the true *C. purpurascens*, Thouars, will shortly appear in this work.

Cynorchis villosa is one of the smallest flowered species of the genus, it is a native of N.E. Madagascar, where it was discovered by Mr. G. Warpur, in ravines at Tananbe. Its nearest ally is, according to Mr. Rolfe, *C. gibbosa*, Ridley (in Journn. Linn. Soc. xx. (188[illegible]) 331), which has

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solitary leaves, larger, glabrous flowers and a long spur. The plant figured flowered in a stove of the Royal Gardens, Kew, in September, 1901.

Descr.—Roots of fleshy fibres covered with black hairs. *Stem* very short, clothed with orbicular sheaths. *Leaves* few, spreading, four to eight inches long, elliptic- or oblong-lanceolate, acute or acuminate, flat, many-nerved, margins undulate. *Scape* eight to ten inches long, erect, green, glandular-villous; sheaths few, ovate-lanceolate. *Raceme* spiciform, three to four inches long, oblong, cylindric, dense-fld.; bracts ovate-lanceolate, and ovary glandular-villous; pedicels about half an inch long. *Perianth* rose-purple, about half an inch long, deflexed; sepals and petals connivent. *Sepals* glandular-villous, ovate-oblong, apiculate, concave. *Petals* rather shorter, ear-shaped, glabrous. *Lip* rather shorter than the sepals, oblong-panduriform, glabrous, with three spreading, rounded terminal lobes. *Spur* about as long as the lip, inflated.—*J. D. H.*

Fig. 1, flower with the sepals removed; 2, petal; 3, lip and column; 4, pollinium:—*all enlarged.*

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TAB. 7846.

BYBLIS GIGANTEA.

Native of Western Australia.

Nat. Ord. ?

Genus BYBLIS, *Salisb.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 664).

BYBLIS *gigantea*; herba erecta, pilis glanduliferis operta, viscida, caule simpliciusculo basi lignoso, foliis 6–12 poll. longis anguste linearibus teretibus v. supra canaliculatis vernatione involutis, pedunculis axillaribus unifloris, sepalis lanceolatis caudato-acuminatis 6–7 nerviis, petalis cuneato-obovatis crenulatis disco tenui hypogyno insertis alabastro contortis, flabellatim multinerviis ima basi primum cohærentibus demum marcescentibus, staminibus 5 hypogynis subdeclinatis, antheris filamentis crassiusculis longioribus inæqualibus basifixis lineari-oblongis, loculis demum ab apice ad basin dehiscentibus, ovario 2-loculare, stylo simplici, stigmate capitellato, ovulis septo affixis, capsula subglobosa sepalis persistentibus breviore loculicida polysperma, seminibus minutis ovoideis, testa crassiuscula rugulosa, embryone immerso, cotyledonibus brevibus.

B. gigantea, *Lindl. in Swan River App.* p. 21. *Lehm. in Plant Preiss.* vol. i. p. 257. *Planch. in Ann. Sc. Nat.* Sér. 3, vol. ix. p. 306. *Benth. Fl. Austral.* vol. ii. p. 470. *Harrow in Gard. Chron.* 1899, vol. ii. p. 409, *et* 1900, vol. ii. p. 351, fig. 109. *Lang in Flora*, vol. lxxxviii. (1901) p. 149, t. 12.

B. Lindleyana, *Planch. l.c.* p. 307.

The genus *Byblis* has been referred to the Order *Droseraceæ*, from which it conspicuously differs in the simple style, two-celled ovary, and other characters. Bentham, in the "Flora Australiensis," points out the resemblance in the structure of its flowers to those of *Cheiranthera*, an Australian genus of the Order *Pittosporeæ*, of very different habit and foliage; the likeness to which genus is evidenced in the corolla, declinate stamens, anthers, two-celled ovary, single style, and loculicidal capsule.

Very recently *B. gigantea* has been made the subject of an elaborate study by Mr. F. L. Lang, in a paper cited above, who, after a close comparison of it with *Polypompholyx*, Lehm., an Australian water-plant of the Order *Lentibularieæ*, unhesitatingly refers it not only to the same Order, but to "close proximity" with that genus. The point upon which Mr. Lang most strongly dwells is, that the glandular hairs of *B. gigantea* are structurally different

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from those of *Droseraceæ* proper, and closely agree with the glands of *Pinguicula*. In support of this affinity, other, often most minute, structural characters common to the two genera are described, but the value of such characters in a classificatory point of view has not been established, and the presence of some may be fortuitous where they occur. On the other hand, the differences between *Byblis* and any genus of *Lentibularieæ* are too glaring to need mention. My own impression is, that until the other species of *Byblis* (*B. liniflora*, Salisb.), and the allied Cape genus *Roridula*, Linn., have been studied with the same care as Mr. Lang has devoted to *B. gigantea*, a pronouncement on the immediate affinities of the latter must be regarded as premature. Nor would it surprise me to learn that *B. gigantea* was generically distinct from the typical *B. liniflora* of tropical Australia, of which I have made only a cursory examination. In one point my description of *B. gigantea* differs from that of others, in which the petals are described as united at the base; I find them in *B. gigantea* to be obscurely coherent at the very base in a very young state only, and perfectly free in their mature condition.

The plant of *B. gigantea* here figured was raised from seeds sent in 1899 to the Royal Botanical Gardens, Edinburgh, by Mr. A. Morison, of the Agricultural Department, West Australia. It flowered first in 1900, since when Dr. Balfour has sent plants to the Royal Gardens, Kew, and has often kindly supplied me with flowers for examination and description.

Descr.—Whole plant, except the corolla, stamens and pistil, clothed with multicellular gland-tipped hairs. *Stem* six to twenty-four inches high, simple or sparingly branched, stout, rigid; rootstock woody. *Leaves* six to twelve inches long, very narrowly linear, terete or channelled above, involute in vernation. *Flowers* solitary, on axillary peduncles shorter than the leaves, very variable in size. *Sepals* lanceolate, caudate-acuminate, usually much shorter than the petals, but very variable in length. *Petals* cuneate-obovate, contorted in bud, inserted on a narrow, hypogynous disk, red-purple, flabellately many-veined, tip rounded, crenulate. *Stamens* much shorter than the petals, unequal, sub-declinate; anthers basifixed, linear-oblong, much longer than the stout filaments, cells dehiscing from the tip eventually to the base. *Ovary* small, globose, two-celled; style slender; stigma capitellate; ovules many, axile on the septum. *Capsule* small, globose, two-celled, crustaceous, loculicidally two-valved. *Seeds* many, minute.—*J. D. H.*

Fig. 1, stamens and pistil; 2, stamen; 3, pistil; 4, glandular hair; 5, transverse section of ovary; 6, capsule and portion of calyx; 7, seed; 8, section of seed:—*all enlarged.*

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BY

SIR JOSEPH DALTON HOOKER, M.D., G.C.S.I., C.B., F.R.S., F.L.S.
Late Director of the Royal Botanic Gardens of Kew.

> Nature and Art to adorn the page combine,
> And flowers exotic grace our northern clime.

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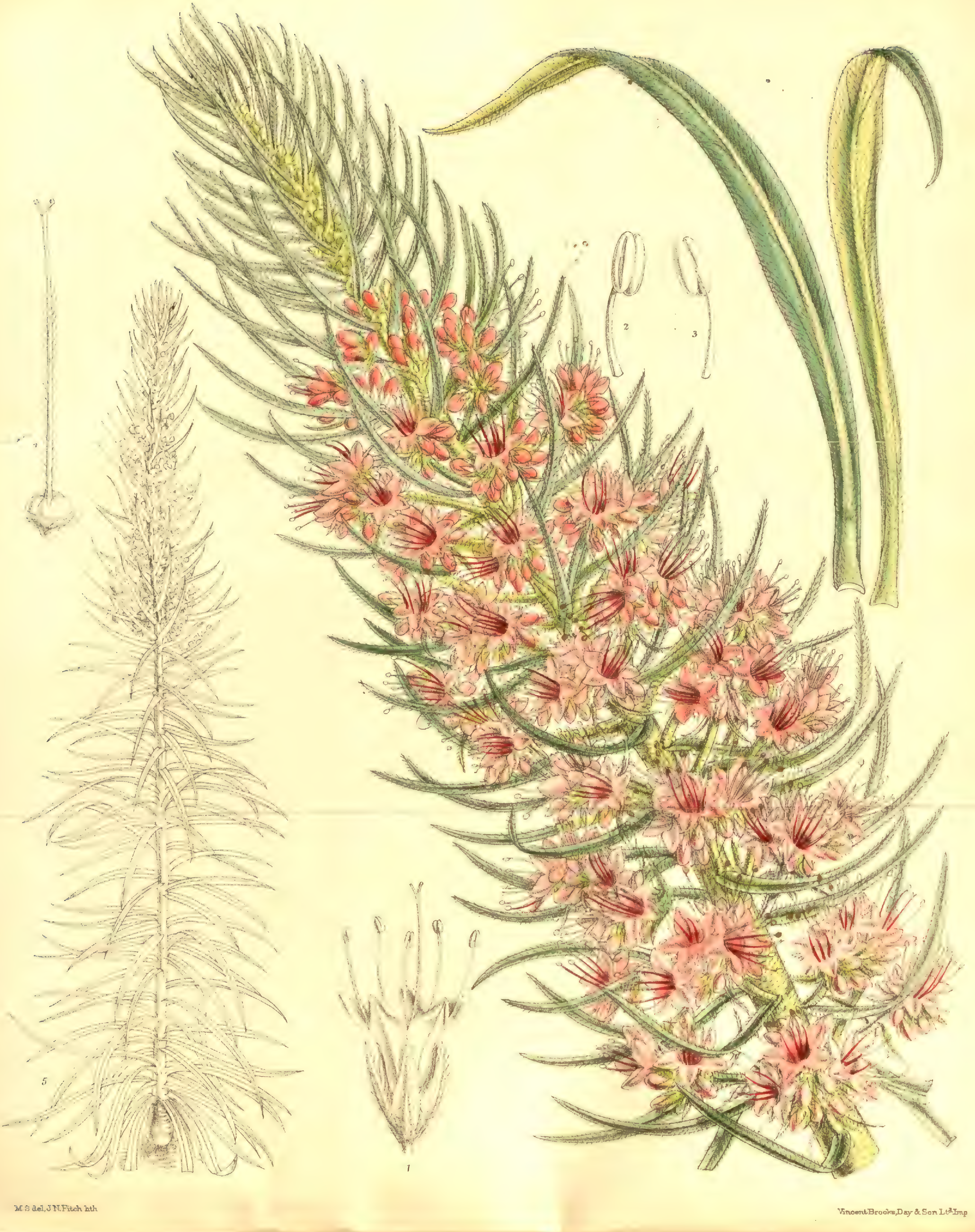

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TAB. 7847.

ECHIUM WILDPRETII.

Native of the Canary Islands.

Nat. Ord. **BORAGINEÆ.—Tribe BORAGEÆ.**

Genus ECHIUM, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 863.)

ECHIUM *Wildpretii*; bienne, molliter pilosa, caule 2–3-pedali simplice stricto erecto a basi paullo incrassato crebre folioso, foliis 6–8-pollicaribus patentibus sessilibus lineari-lanceolatis acuminatis utrinque pilis mollibus subsericeis vestitis costa latiuscula nervis obscuris, cymis multifloris in thyrsum terminalem elongatum foliosum dispositis, foliis floralibus linearibus patenti-incurvis cymas pedunculatas longe superantibus, floribus breviter pedicellatis, calycis $\frac{1}{5}$ poll. longi segmentis æqualibus lanceolatis acuminatis pilosis, corolla infundibulari-campanulata pallide rubra tubo calyce paullo longiore basi intus annulo pilorum instructo, lobis æqualibus late ovatis obtusis, filamentis erectis corolla duplo longioribus pallide sanguineis, antheris parvis oblongis, stylo piloso apice bipartito.

E. Wildpretii, *Pearson in Hort. Kew.* (nomen).

The species of *Echium*, of which more than eighty are catalogued in the Kew "Index Plantarum," are very difficult of discrimination. This applies especially to the species of Madeira and the Canary Islands, of which twenty have been described, but of which not a few will probably be reduced to synonyms or varieties when they shall be collated and critically examined. Of the plant here figured seeds were sent to the Royal Gardens, Kew, by Mr. Wildpret, Curator of the Botanic Gardens of Orotava, Teneriffe, under the name of *E. candicans*, Linn. f., a very different plant, as may be seen by a reference to tab. 6868 of this work. The seeds germinated freely, and the young plants ripened their seeds in 1897. From these a batch of plants was raised, which flowered in May, 1899, and dying after flowering, proved the species to be biennial. In the first year the plant formed a dense rosette of long, narrow, silvery, silken leaves, and the stem elongates after about sixteen months. The only other species known to me with the habit, thyrsoid inflorescence, and floral leaves much exceeding the cymes, is *E. callithyrsum*, Webb (ex Bolle in Ind. Sem. Hort. Berol. 1867, App. i. p. 6), a Canary Island plant, of which there are specimens (if

correctly named) in the Kew Herbarium, from the garden of the late Rev. Henry Harper-Crewe, M.A., of Drayton Beauchamp. This differs from *E. Wildpretii* in being a much more robust, hispidly hairy plant, with strongly nerved leaves, very unequal calyx-segments, and a shorter, broader corolla-tube. It is further described as being a small tree.

Descr.—A tall, softly hairy biennial, with a simple, erect, leafy stem, two to three feet high, terminated by a dense-flowered thyrsus of innumerable shortly peduncled cymes, which are very much shorter than the linear, up-curved floral leaves. *Leaves* six to eight inches long, sessile, narrowly linear-lanceolate, acuminate, spreading, softly hairy on both surfaces, costa stout beneath, nerves faint; lower floral leaves three to four inches long, linear. *Flowers* sub-sessile. *Calyx* about one-fifth of an inch long; segments equal, lanceolate, acuminate, hairy. *Corolla* between funnel- and bell-shaped, pale red; lobes rounded. *Filaments* far exserted. *Style* hairy, tip bifid.—*J. D. H.*

Fig. 1, flower; 2 and 3, anthers; 4, pistil:—*all enlarged.*

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Tab. 7848.

DECAISNEA Fargesii.

Native of China.

Nat. Ord. Berberideæ.—Tribe Lardizabaleæ.

Genus Decaisnea, *Hook. f.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 42.)

Decaisnea *Fargesii*; frutex erectus, glaberrimus, polygamo-dioicus, caulibus strictis erectis parum divisis apicem versus foliosis, foliis pedalibus patulis impari-pinnatis, petiolo gracili tereti, foliolis oppositis multijugis petiolulatis ovatis oblongisve subcaudato-acuminatis, racemis axillaribus elongatis decurvis, bracteis ⅙ poll. longis elongato-subulatis patulis caducis, floribus pendulis viridibus, sepalis lanceolatis, longe acuminatis, petalis 0, fl. masc. filamentis in tubum elongatum cylindraceum apice antheriferum connatis, antheris tubo adnatis linearibus connectivo in unguem erectum producto, fl. foem. staminodii tubo brevissimo antheris longe cuspidatis, carpellis lineari-oblongis, fructus carpellis 3–4-pollicaribus lineari-oblongis rectis cylindraceis ½ poll. diam. lævibus subtorulosis cæruleis, seminibus oblongis ad ⅓ poll. longis atris.

D. Fargesii, *Franch. in Journ. de Bot.* vol. vi. (1892) p. 233. *D. Bois in Journ. Soc. Nation. d'Hortic. France*, Ser. IV. vol. i. (1900) p. 190; *et in Rev. Hortic.* 1900, p. 270, figg. 122, 123, 124.

Decaisnea Fargesii, is a very interesting plant, a second species of a very remarkable Eastern Himalayan genus, thus affording a conspicuous example of the affinity of the Himalayan and Chinese mountain Floras. The type species, *D. insignis*, Hook. f., is figured at t. 6731 of this work, where its position in the tribe *Lardizabaleæ* of *Berberideæ* is indicated. The resemblance of *D. Fargesii* to *D. insignis*, in habit, foliage, inflorescence and flowers is very close indeed, the principal differences in foliage and flowers being, that the leaflets of *D. Fargesii* are of a darker green, and have rather longer tips, the sepals have longer, much narrower tips, and the bracts are longer and more persistent. The remarkable distinction between these species lies in the fruit, the carpels of which in *D. insignis* are three to four inches long, by an inch and a half in diameter, strongly falcately incurved, golden-yellow, with a somewhat mamillate surface, and the seeds are half an inch long, and brown; in *D. Fargesii* the carpels are only two and a half to three inches long, by half an inch in diameter, are nearly straight, dull blue in colour, and are said to resemble blue caterpillars, and the seeds are much smaller

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and black. There are some differences in the length and breadth of the produced connectives of the anthers, but these appear to be inconstant, judging from the published drawings and cultivated specimens.

D. Fargesii is a not uncommon plant in the mountain forests of Western China, at elevations of nine thousand feet to thirteen thousand feet. It was discovered in the province of Szechuen, by Father R. P. Farges, Missionaire Apostolique, by whom seeds were sent to Messrs. Vilmorin & Co., who flowered it at Barres, Loiret. The plant here figured was presented to the Royal Gardens, Kew, by Mr. Maurice L. de Vilmorin in 1897; it flowered in April, 1901, and again in 1902, in the Temperate House, where, planted in a border, it forms a sturdy shrub, seven feet high. It has never fruited. There are specimens in the Kew Herbarium collected by Dr. Henry, F.L.S., and others, in the mountains of the provinces of Szechuen, Hupeh, and Yunnan, at elevations of nine thousand feet to thirteen thousand feet, as far West as the borders of Tibet.

All collectors agree as to the fruit being eatable, but details of its qualities are wanting. The main distinctions between the present plant and *D. insignis* being in the fruit, as indicated above, no further description is here required.—*J. D. H.*

Fig. 1, stamens of male fl.; 2, interior of base of do. showing the pistillodes; 3, portion of fem. infl.; 5, fruit; 6, seed:—figs. 1, 2, 4, *enlarged*; 3, of *nat. size*; 5 and 6, *nat. size*, from Rev. Horticole.

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TAB. 7849.

HETEROTOMA LOBELIOIDES.

Native of Mexico and Guatemala.

Nat. Ord. CAMPANULACEÆ.—Tribe LOBELIEÆ.

Genus HETEROTOMA, *Zucc.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 553.)

HETEROTOMA *lobelioides*; herba erecta, ramosa, ramulis gracilibus cum petiolis foliorum marginibus nervisque subtus pubescentibus, foliis 3–4 poll. longis ovato-lanceolatis acuminatis subremote dentatis basi rotundatis cuneatisve pallide viridibus nervis utrinque 5–7, petiolo gracili 1–2 poll. longo, supremis sessilibus minoribus lineari-lanceolatis, pedunculis axillaribus 2-pollicaribus gracilibus glaberrimis, floribus ad 2-poll. longis falcatim incurvis, calycis dentibus viridibus subulatis 3 ad basin corollæ ad $\frac{1}{3}$ poll. longis divaricatis, 2 ad apicem calcaris corollæ minoribus inflexis erectis, corollæ calcare tubiformi sanguineo limbo calcare paullo breviore oblongo aureo trifido, lobis æquilongis lateralibus linearibus intermedio oblongo, columna staminea corollæ limbo æquilonga.

H. lobelioides, *Zucc. in Flora*, vol. xv. (1832) pars II. *Beibl.* p. 101. *DC. Prodr.* vol. vii. p. 350. *Endl. Iconogr.* t. 53. *Van Houtte in Flore des Serres*, Ser. II. vol. iv. (1861) p. 163, t. 1454. *Caruel in Ann. Sc. Nat.* Ser. IV. vol. xi. p. 270. *Hemsl. Biol. Centr. Am. Bot.* vol. ii. p. 270; iv. p. 66. *S. Wats. in Proc. Am. Acad.* vol. xviii. (1883) p. 111. *Benth. Pl. Hartw.* p. 89.

Myopsia mexicana, *Presl, Prodr. Monogr. Lobel.* p. 8.

Lobelia calcarata, *Bertol. Fl. Guatemal.* p. 9.

Heterotoma is a very singular genus, consisting of seven Mexican and Central American species, of which *H. lobelioides* is the type. Its distinctive character consists in the base of the corolla being produced downwards into a horn, to the back of which the narrow lower lip of the calyx is adnate nearly to its tip. In *H. lobelioides* the two lobes of the lower lip of the calyx are represented by two green subulate spurs, contrasting curiously in colour with the dark blood-red of the spur itself. The upper lip of the calyx consists of three green, subulate, spreading spurs at the base of the corolla.

H. lobelioides is a mountain plant, discovered by Karwinski in Southern Mexico, at eight thousand feet elevation, on the Cumbre de St. Antonio. It has also been collected in Costa Rica by Herbst; in Guatemala, at Acatenango, by Hartweg; and on the Volcan de Santa Maria by the late Mr. O. Salvin, one of the authors of the magnificent

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"Biologia Centrali Americana." For the plant figured I am indebted to the Botanical Gardens of Cambridge, where, as Mr. Lynch informs me, it was received from Mexico with the name of the Bird-plant.

Descr.—An erect ramous herb, with pubescent stem, branches, petioles, and leaf-margins. *Leaves* three to four inches long, alternate, ovate-lanceolate, acuminate, remotely toothed, petiole slender; floral small, linear-lanceolate, entire. *Peduncles* solitary, sub-erect, axillary, two to three inches long, slender. *Flower* about two inches long, falcately incurved. *Calyx*-teeth small, subulate, green, three at the base of the corolla, spreading, two smaller erect at the apex of the tube of the corolla. *Corolla-tube* corniform, blood-red; limb golden-yellow, three-lobed beyond the middle, lobes equal in length, side ones narrow, linear, middle one oblong. *Staminal column* as long as the limb of the corolla, erect.—*J. D. H.*

Fig. 1, flower with the limb of the corolla removed; 2, anthers; 3, top of style and stigma:—*all enlarged.*

7850

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TAB. 7850.

FRITILLARIA ASKABADENSIS.

Native of Central Asia.

Nat. Ord. LILIACEÆ.—Tribe TULIPEÆ.

Genus FRITILLARIA, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 817.)

FRITILLARIA (Petilium) *askabadensis*; elata, robusta, foliosa, bulbo magno globoso squamoso, caule superne coma foliorum floribusque coronato, foliis læte viridibus sessilibus inferioribus sparsis lineari-oblongis lanceolatisve subacutis 4–5 poll. longis, superioribus 5–6 poll. longis subverticillatis lineari-lanceolatis acuminatis, supremis fasciculatis minoribus angustioribus flexuosis, floribus 5–8 inter folia suprema subverticillatis cernuis inodoris, pedicellis ¼–½ poll. longis decurvis bracteis parvis linearibus, perianthii campanulati pallide flavo-viridis segmentis pollicaribus oblongis obtusis, basi dorso gibbis, nectario parvo depresso viridi, filamentis brevibus, antheris lineari-oblongis erectis obtuse apiculatis aureis, ovario trigono.

F. askabadensis, *Micheli in Journ. Soc. Hort. France*, vol. iii. (1902) p. 145. *Baker in Gard. Chron.* 1902, vol. i. p. 237, fig. 238. *Journ. Hort.* Ser. 3, xliv. p. 293.

The Askabad Fritillary is a very interesting plant, from being a member of the Section *Petilium*, hitherto represented by a solitary species, the well-known Crown-Imperial, *F. imperialis*, Linn. (tab. 194 and 1215), from which it differs notably in the smaller campanulate flowers of a greenish yellow colour. It was discovered by Mr. Sintenis near Askabad, in the Russian Transcaspian region, not far from the north frontier of Persia, growing in a calcareous soil, at an elevation of about one thousand two hundred and fifty feet above the sea level. Micheli describes the flowers as proterandrous, and I suspect they are dichogamous, for he describes the filaments as long, and style elongate, with a tricuspid stigma, whereas the stamens are short in our specimen, and the style short, trigonous, and papillose.

I am indebted to Miss Willmott, V.M.H., of Warley Place, Essex, for the specimen here figured, which flowered in her garden in March, 1902.

Descr.—*Bulb* large, globose, scaly. *Stem* tall, stout, sparingly leafy below, crowned with a whorl of many spreading, bright green leaves. *Lower leaves* scattered,

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four to five inches long, linear-oblong or lanceolate, acuminate; uppermost forming a whorl-like cluster, each five to six inches long, linear-lanceolate. *Flowers* five to eight, axillary, pendulous from amongst the uppermost leaves; bracts small, linear, green; pedicels one-fourth to half an inch long, decurved. *Perianth* about an inch long, campanulate, pale yellow-green; segments oblong, obtuse, gibbous at the base. *Nectary* a small green depression. *Filaments* short; anthers linear-oblong, erect, obtusely apiculate, yellow. *Ovary* trigonous; style rather stout, sub-clavate, three-grooved.—*J. D. H.*

Fig. 1, base of perianth segment and nectary; 2 and 3, stamens; 4, pistil:—*all enlarged.*

7851.

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TAB. 7851.

GELSEMIUM SEMPERVIRENS.

Native of the Southern United States.

Nat. Ord. LOGANIACEÆ.—Tribe GELSEMIEÆ.

Genus GELSEMIUM, *Juss.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 789).

GELSEMIUM *sempervirens*; frutex volubilis, alte scandens, gracilis, glaberrimus, fere sempervirens, ramulis pendulis fusco-rubris, foliis $1\frac{1}{2}$–2 poll. longis oppositis breviter petiolatis oblongis v. lanceolatis acuminatis supra luride viridibus subtus pallidis rubro tinctis, stipulis obsoletis, pedunculis axillaribus vix $\frac{1}{4}$ poll. longis 1–3-floris squamulosis, floribus erectis dichogamis, calycis $\frac{1}{4}$ poll. longi lobis ovato-lanceolatis, corollæ aureæ tubo pollicari infundibulari-campanulato lobis tubo brevioribus patulis ovato-rotundatis obtusis, staminibus tubo corollæ insertis, antheris lineari-oblongis, stylo elongato, stigmate brevi bilabiato labiis inæqualibus 2-lobis, lobis linearibus, capsula ellipsoidea compressa cuspidata septicida, valvis apice bifidis, seminibus alatis.

G. sempervirens, *Ait. Hort. Kew.* Ed. II. vol. ii. p. 64. *Elliot, Sketch Bot. S. Carol.*, &c., vol. i. p. 311. *Mech. Fl. U. St.* t. 3. *Rep. U. St. Dep. Agric.* 1884, p. 134, t. 16. *A. Gray Man. Bot. N. U. St.* (Ed. 1867) p. 391; *Synopt. Fl. N. Am.* vol. ii. pars I. p. 107. *Chapm. Fl. S. U. St.* p. 183. *Hemsl. Biol. Centr. Am.* vol. ii. p. 338.

G. lucidum, *Poir. Encycl. Suppl.* vol. ii. p. 714. *Delaun. Herb. Amat.* (1819) vol. iii. t. 169.

G. nitidum, *Michx. Fl. Bor. Am.* vol. i. (1803) p. 120. *Pursh, Fl. Am. Sept.* vol. i. p. 184. *Bentl. & Trim. Med. Pl.* vol. iii. p. 181, t. 181.

JEFFERSONIA sempervirens, *Brickell in Med. Repos. N. York*, vol. i. (1800) p. 555.

BIGENONIA sempervirens, *Linn. Sp. Pl.* p. 623.

BIGNONIA foliis ovato-lanceolatis, &c., *Royen, Fl. Leyd. Prodr.* p. 290.

Gelseminum, sive Jasminum luteum odoratum, *Parkins. Theatr. Bot.* p. 1465. *Catesb. Nat. Hist. Carolin.*, &c., vol. i. p. 53, t. 53. *Ray, Hist. Plant.* vol. ii. p. 1600.

Syringa volubilis virginiana, &c. *Pluk. Almag.* p. 359, t. 112, fig. 5.

Anonymos sempervirens, *Walt. Fl. Carolin.* p. 98.

The Carolina Jasmine, or yellow Jessamine of the Southern U. States.

It is remarkable that so handsome a greenhouse climber, and one that has been so long in cultivation, should not have been figured in any modern English horticultural work. It was introduced into England by Tradescant, was cultivated by Parkinson in his garden in Long Acre in 1640, and figured in his "Theatrum Botanicum" in the same year.

The genus *Gelsemium* was founded in 1789, by Jussieu, on *Bignonia sempervirens*, Linn., the *Gelseminum*, sive *Jas-*

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minum, &c., of Parkinson, the name being derived from the Italian for Jessamine. In 1803 Michaux published it as *G. nitidum*, and in 1786 Poiret as *G. lucidum*, and Aiton in 1811 as *G. sempervirens*. The only other known species is *G. elegans*, Benth., a native of Burma and China.

G. sempervirens is a common plant in the woods and low grounds of the Southern United States, from Virginia to Florida, and westward to Texas and Southern Mexico. Bentley and Trimen include it in their "Medicinal Plants," where the dried stems and roots prepared by the Shakers of New Lebanon are stated to be in common use in America as a sedative. The drug in large doses poisons by asphyxia. It is not recognized in the British Pharmacopœia.

The plant figured flowers annually in the winter months in a conservatory in the Royal Gardens, Kew.

Descr.—A slender, glabrous, nearly evergreen, tall, twining climber; young branches pendulous, bark red-brown. *Leaves* opposite, one and a half to two and a half inches long, oblong or lanceolate, acuminate, dark green above, pale and somewhat reddish beneath; petiole very short; stipules obsolete. *Flowers* solitary, or two to three on a very short, axillary, scaly, erect peduncle, fragrant, dichogamous, with either short filaments and long style, or *vice versâ*. *Calyx* short, lobes ovate-lanceolate. *Corolla* golden-yellow in bud, paler when expanded; tube between funnel- and bell-shaped, an inch long, orbicular-ovate. *Anthers* linear-oblong. *Style* slender; stigma small, with four linear arms in opposite pairs of unequal length. *Capsule* ellipsoid, cuspidate, compressed, septicidal. *Seeds* winged.—*J. D. H.*

Fig. 1, calyx and style; 2, portion of corolla and stamens of flower with short filaments; 3, stamen; 4, ovary; 5, stigma:—*all enlarged.*

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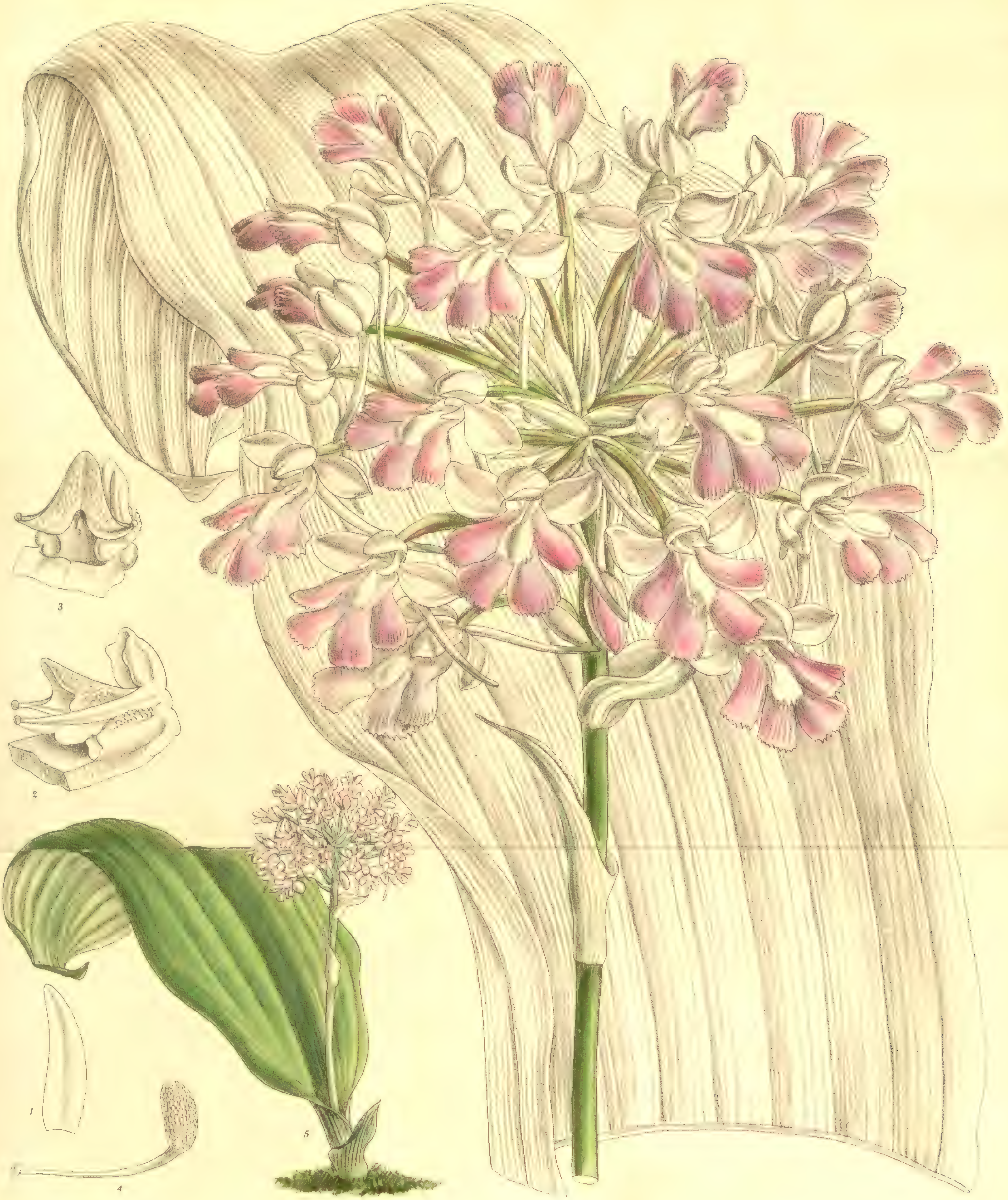

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TAB. 7852.

CYNORCHIS PURPURASCENS.

Native of the Mascarene Islands.

Nat. Ord. ORCHIDEÆ.—Tribe OPHRYDEÆ.

Genus CYNORCHIS, *Thou.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 628.)

CYNORCHIS *purpurascens*; epiphytica, caule brevi, foliis solitariis v. nunc binis et valde inæqualibus majore 1–2-pedali sessili oblongo v. oblongo-lanceolato acuminato supra læte viridi multinervi, nervis parallelis subtus crassis, scapo pedali valido erecto vaginis 1–2 lanceolatis recurvis instructo, floribus racemosis v. in capitulum 6–7 poll. diam. congestis cum paucis inferioribus dissitis, bracteis pollicaribus lanceolatis erectis vaginantibus pallide viridibus, ovario fere bipollicari gracili, perianthio 1½ poll. lato roseo labelli disco albido, sepalo dorsali brevi ovato obtuso galeato, lateralibus multo majoribus orbiculari-ovatis patulis, petalis lineari-lanceolatis ascendentibus sepalo dorsali æquilongis, labello amplo sessili subæqualiter 4-fido, lobis late cuneatis patulis apice crenulatis, calcare gracili ovario subæquilongo leviter incurvo, columna brevissima alba.

C. purpurascens, *Thou. Orch. Iles Afric.* t. 15 (*Cynosorchis*). *Lindl. Gen. & Sp. Orchid.* p. 331 (*non tab. nostr.* 7551). *Baker, Fl. Maurit.* p. 337. *Rolfe in Orchid. Rev.* vol. ix. (1901) pp. 10, 20. W. Watson *in Gard. Chron.* 1900, vol. ii. p. 335; *Weathers l.c.* 1901, vol. i. p. 86, fig. 37. *Garden*, 1900, p. 375.

C. calanthoides, *Kræenzl. in Bremen Abhandl. Naturwiss. Verein.* vol. vii. (1882) p. 260.

Gymnadenia purpurascens, *A. Rich. in Mém. Soc. Hist. Nat. Par.* vol. iv. (1828) p. 27. *Bojer, Hort. Maurit.* p. 311.

The plant erroneously figured in this work as *Cynorchis purpurascens*, tab. 7551, though agreeing with Thouar's meagre description of that plant, proves, now that the latter is known, to be an entirely different species, which must retain the name that Reichenbach gave it of *C. Lowiana*. The true *C. purpurascens*, though varying greatly in size, never appears to assume the very slender character of *C. Lowiana*, from which it differs, in its fully developed state, in the leaf, which is perhaps the largest of any Orchideous plant, in the very many-flowered inflorescence, much larger bracts, and larger, broader flowers, with a slender spur. The structure of the column is very much the same in both, but the rostellum, which is decurved in *C. Lowiana*, is sub-erect in *C. purpurascens*, so far as can be judged from the specimens figured.

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Cynorchis purpurascens is a native of the Mascarene Islands, where it was first found by Mr. G. Warpur, who describes it as growing at an elevation of one thousand to one thousand two hundred feet, on branches of *Pandanus Candelabrum*, sometimes in tufts of *Asplenium Nidus*, hanging over streams, and often accompanied by *Impatiens grandiflora*, Hemsl. (tab. 7826). It is, according to Bojer, also a native of the Mauritius, in marshes of the Plaines-Wilhems and Moka, and Dr. Balfour collected it in Bourbon, where it was discovered by Thouars. In the Royal Gardens, Kew, it grows and flowers freely in the same house by *Odontoglossum crispum*, and it continues flowering for upwards of six weeks in winter and early spring.

Descr.—*Stem* very short. *Leaves* solitary or two, when one is very small, the other attaining two feet in length and eight inches in breadth, sessile, oblong, acuminate, bright green above, nerves eight or more, parallel, very stout on the pale undersurface of the leaf. *Peduncle* a foot high, stout, strict, erect, bearing two large lanceolate acuminate sheaths, two inches long. *Flowers* very many, in a short, spiciform raceme or globose head, which is sometimes seven inches in diameter, with a few flowers lower down in the peduncle. *Bracts* an inch long, lanceolate, acuminate, very pale green, convolute, much shorter than the very slender strict ovaries, which are two inches long. *Perianth* an inch and a half broad, rose-coloured, with the disk of the tip white. *Dorsal sepal* small, oblong, galeate, lateral much larger, orbicular-ovate, spreading. *Petals* very small, linear-lanceolate, ascending along the margins of the dorsal sepals. *Lip* large, an inch broad and long, sub-equally four-lobed, lobes cuneiform, with crenulate anterior margins; spur about as long as the ovary, slender, slightly incurved. *Column* very short; rostellum sub-erect.—*J. D. H.*

Fig. 1, petal; 2, side, and 3, front view of column and anther; 4, pollinium:—*all enlarged.*

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TAB. 7853.

DISCHIDIA HIRSUTA.

Native of Malaya.

Nat. Ord. ASCLEPIADEÆ.—Tribe MARSDENIEÆ.

Genus DISCHIDIA, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 777.)

DISCHIDIA *hirsuta*; scandens, tota floribus exceptis papillosa caulibus tenuibus flexuosis fusco-purpureis nodis radicantibus, internodiis foliis longioribus, foliis pollicaribus brevissime petiolatis orbiculari-ovatis mucronatis plus minusve papillosis et hispido-pilosis, subtus inter nervos lacunosis fusco-viridibus, nervis utrinque ad 4, racemis intra-petiolaribus paucifloris brevissime pedunculatis, floribus breviter pedicellatis, calycis lobis minutis ovatis obtusis, corolla glabra ½ poll. longa carnosa urceolata, tubo inferne globoso atro-sanguineo superne constricto roseo apice 5-fido lobis ovatis erectis, intus annulis 2 pilorum uno fauci altero sito instructo, coronæ exterioris squamis erectis malleiformibus.

D. hirsuta, *Decne. in DC. Prodr.* vol. viii. p. 632. *Hook. f. Fl. Brit. Ind.* vol. iv. p. 50. W. Watson *in Gard Chron.* 1896, vol. ii. p. 182.

D. Brunoniana, *Griff. Notul. Pl. Asiat.* pars IV. p. 44, *Ic. Pl. Asiat.* vol. iv. t. 410 A fig. 1. (*polliniis et squamis erroneis*).

D. fasciculata, *Decne. l.c.*

Leptostemma hirsutum & fasciculatum, *Blume, Bijdr.* p. 1058.

Dischidia is a tropical Asiatic and Australian genus, of about twenty-five species, of which that here figured is the first known to me as having flowered in Europe. One species, *D. Rafflesiana*, is remarkable for the conversion of its leaves into water-holding ascidia, into which the roots at the nodes descend. It is a widely distributed species from E. Bengal to Australia, and is grown at Kew, where, however, it has never flowered, but forms abundance of leaf-pitchers. *D. hirsuta* is one of the smallest leaved of the genus; it inhabits the southernmost provinces of Burma, Tenasserim, the Malayan Peninsula, and Java. Plants of it were sent to the Royal Gardens, Kew, from Singapore, by Mr. Ridley. The stem clings, like ivy, to the wall of the Nepenthes house in the Royal Gardens. It flowers in spring and summer.

Descr.—*Stem* very slender, scandent, covered with papillæ; internodes longer than the leaves; nodes rooting. *Leaves* about an inch long, very shortly petioled, orbicular-ovate, acute, base rounded, lacunose between the nerves

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beneath, dull green, papillose and more or less scabrid on the upper surface; nerves about five pairs, spreading, prominent beneath. *Raceme* very short, intra-axillary, very shortly peduncled, two or three-flowered. *Sepals* four, minute, ovate, obtuse. *Corolla* about one-third of an inch long, pitcher-shaped, globose below the middle, narrowing upwards into a quinquefid tube, glabrous or very sparsely papillose, the globose portion very dark blood-red, the tubular and ovate teeth rose-coloured; within the corolla are two rings of hairs, one at the mouth of the corolla, the other at about the middle of the globose portion. *Outer scales* of the corona hammer-shaped; inner linear-oblong, bifid.—*J. D. H.*

Fig. 1, flower; 2, vertical section of the same; 3 and 4, outer scales of the corona; 5, column of anthers; 6 and 7, inner scales of the corona:—*all enlarged.*

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Tab. 7854.

PODOCARPUS PECTINATA.

Native of New Caledonia.

Nat. Ord. Conifereæ.—Tribe Podocarpeæ.

Genus Podocarpus, *L'Hér.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 433.)

Podocarpus (Dacrycarpus) *pectinata*; arbor 50–60-pedalis, trunco robusto, ramulis crassiusculis viridibus flexuosis, foliis biformibus, aliis sparsis parvis squamiformibus $\frac{1}{10}$–$\frac{1}{4}$ poll. longis ramis ramulisque appressis ovatis acuminatis, aliis in ramulos breves terminales sessilibus bifariis confertis ascendentibus linearibus acutis v. obtusis crassiusculis saturate viridibus fascia alba utrinque costæ ornatis marginibus recurvis, spicis masculis 1–3 terminalibus decurvis 1–$1\frac{1}{2}$ poll. longis cylindraceis $\frac{1}{8}$ poll. diam., antheris dense imbricatis late deltoideis angulis rotundatis ad $\frac{1}{6}$ poll. latis, loculis ad basin connectivi membranacei divaricatis, pedunculis femineis 2–3 terminalibus incurvato-reflexis $\frac{3}{4}$ poll. longis unifloris inferne gracilibus bracteis membranaceis imbricatis ovato-triangularibus decurrentibus stipatis, superne incrassatis bracteis 5–6 distantibus basi decurrente carnosis mamillosis, bractearum limbo abbreviato triangulari, ultima sola latiore seminifera, semine immaturo ovoideo extus carnoso sulcis plexisque undique excavato, hilo basilari lato, micropyle infra apicem sito 2-labiato labio anteriore producto.

P. pectinata, *Panch. mss. ex. Brongn. & Gris in Bull. Bot. Soc. France*, vol. xvi. (1869) p. 330. *Benth. & Hook. f. Gen. Plant.* vol. iii. p. 433. *Masters in Gard. Chron.* 1892, vol. i. p. 113. *Kew Bulletin*, April, 1892, p. 105.

Dacrydium Pancheri, *Brongn. & Gris l.c.*

The position of the plant here figured, whether under *Dacrydium* or *Podocarpus*, is as yet unsettled, from the absence of female flowers and ripe fruit. Brongniart and Gris describe the micropyle of the unripe seed as subterminal, which would indicate *Dacrydium* as its genus; but its discoverer, Mr. Pancher, referred it to *Podocarpus*, of which it has the habit, but in which the micropyle is basal. In the "Genera Plantarum" it is placed with another New Caledonian species (*Dacrydium taxoides*, Brongn. & Gris) in the sections *Dacrycarpus*, of *Podocarpus*, of which that work says, "nobis tam fructu quam habitu ad *Podocarpum* referenda videntur"; and this view is adopted by Dr. Masters. It may form a genus, *Dacrycarpus*, distinct from both, for its authors point out as two remarkable particularities, the seed being drupaceous, and wanting the cupula of *Dacrydium*.

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P. pectinata is a native of rocky places in New Caledonia. The Royal Gardens, Kew, received the plant from which the figure here given was taken from Mr. Moore, Director of the Botanic Garden, Sydney, in 1891; it flowered in a greenhouse in January, 1902.

The descriptions of the female inflorescence and fruit are taken from the Bulletin of the Botanical Society of France, cited above.

Descr.—A tree fifty to sixty feet high; trunk attaining sixteen inches in diameter; branches spreading; branchlets rather stout, bifarious, flexuous, green. *Leaves* of two forms; (1) minute, scale-like, appressed to the branches and branchlets, one-tenth to one-fourth of an inch long, ovate, acuminate, green; (2) sessile on to the ultimate branchlets, bifarious, crowded, linear, half an inch long, obtuse or acute, straight or sub-falcate, dark green with a broad white stripe on each side of the midrib. *Male inflorescences* spiciform, one to three on the tips of the branchlets, an inch to an inch and a half long, one-sixth of an inch in diameter, recurved, densely covered with imbricating, triangular, ovate anthers, each about one-tenth of an inch broad; cells diverging at the base of the broad, thin connective. *Fem. inflorescence* of two to three terminal, incurved, bracteate peduncles three-fourths of an inch long, each bearing a single ovule in the terminal bract. *Immature seed* ovoid, with a fleshy coat, broad basilar hilum, and two-lipped micropyle below the apex.—*J. D. H.*

Fig. 1, leaves; 2, male inflorescence; 3, dorsal, and 4, front view of anther: —*all enlarged.*

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TAB. 7855.

EPIDENDRUM ENDRESII.

Native of Costa Rica.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus EPIDENDRUM, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 528.)

EPIDENDRUM (Œrstedella) *Endresii*; caulibus cæspitosis strictis rigidis suberectis crassitie pennæ columbinæ vaginis foliorum verrucosis undique tectis, veruccis rubro-brunnèis, foliis bifariis sessilibus 1 poll. longis patenti-recurvis oblongis apice rotundatis v. 2-lobis coriaceis basi semi-amplexicaulibus supra saturate viridibus subconvexis nitidis, costa impressa, subtus pallidis, racemo terminali breviter pedunculato erecto laxifloro, bracteis lineari-lanceolatis pedicellis pollicaribus dimidio brevioribus, sepalis ad ½ poll. longis oblongis obtusis albis, petalis sepalis æquilongis obovato-oblongis apiculatis albis, labello sepalis longiore 3-lobo, lobis lateralibus oblongis unolatere albis altero pallide roseis, terminali obcordato sinu lato, disco macula sanguinea notato, columna apice truncata 4-fida, anthera mitriformi.

E. Endresii, *Rchb. f. in Gard. Chron.* 1883, vol. i. p. 432. *O'Brien, l.c.* 1885, vol. i. p. 504, fig. 91.

E. Endresii is a peculiar-looking little species, with box-like leaves, of one of the largest American genera of Orchids. It is a native of Costa Rica, where it was discovered by Endres, and whence it was imported by Mr. Lehman in 1878. The plant figured flowers annually in an intermediate Orchid house of the Royal Gardens, Kew, in the winter months, and has the odour of a freshly sliced cucumber.

Descr.—*Stems* tufted, about a foot high, slender, about as thick as a pigeon's quill, stiff, sub-erect, clothed with green leaf-sheaths, which are thickly studded with minute red-brown warts; internodes a quarter to half an inch long. *Leaves* about an inch long, bifarious, sessile, spreading and recurved, coriaceous, broadly oblong, tip rounded or emarginate, deeply channelled along the middle, sides convex, very dark green and shining above, pale green beneath. *Raceme* terminal, very shortly peduncled, erect, three to five inches long, lax-flowered; bracts narrowly lanceolate, acuminate, green; pedicel with ovary about an inch long, slender. *Perianth* an inch broad. *Sepals* oblong, obtuse, white. *Petals* as long,

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obovate-oblong, white. *Lip* three-lobed, lateral lobes oblong, spreading, half white and half pale pink; midlobe broadly obcordate, with a very open sinus, white suffused with pink, and with a bright red blotch at the base of the midlobe. *Column* truncate, four-cleft at the top. *Anther* mitriform.—*J. D. H.*

Fig. 1, column and lip; 2, side, and 3, front view of column; 4, anther; 5 and 6, pollinia:—*all enlarged.*

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TAB. 7856.

BRYOPHYLLUM CRENATUM.

Native of Central Madagascar.

Nat. Ord. CRASSULACEÆ.

Genus BRYOPHYLLUM, *Salisb.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 658).

BRYOPHYLLUM *crenatum*; glaberrimum, caule 3–5-pedale erecto v. basi decumbente basi simpliciusculo terete apice trichotome ramoso, internodiis longiusculis, foliis oppositis crassis oblongis v. late ovato-oblongis basi cordatis v. biauriculatis auriculis incurvis sinuato-crenatis supra læte viridibus subtus pallidis, costa subtus valida, nervis utrinque 3–5, floralibus minoribus linearibus, petiolis validis 1–2 poll. longis teretibus, cymis terminalibus corymbiformibus laxifloris, floribus nutantibus rubro-aurantiacis, pedicellis gracilibus decurvis ¼–¾ poll. longis, calyce inflato ⅓ poll. diam. globoso 4-dentato dentibus deltoideis basi rotundato v. intruso, corollæ tubo ⅔ poll. longo subcylindraceo medio paullo constricto, lobis 4 brevibus late oblongis apice rotundatis uniseriated staminibus 8-medio tubo insertis, antheris inclusis minutis oblongis, disci glandulis minutis, ovarii carpellis in stylos loculis subæquilongis graciles attenuatis.

B. crenatum, *Baker, in Journ. Linn. Soc.* vol. xx. (1884) p. 139.

Of *Bryophyllum*, Salisb., only five species are known, all, no doubt, indigenous in Africa or its islands only, though one of them, the well-known *B. calycinum*, Salisb. (t. 1409), has, through its property of propagating itself by fragments of its succulent leaves, become so widely spread in the tropics of both hemispheres, as to have been regarded as a native of both America and Asia. The filaments vary in length in the genus, in *B. calycinum* and *B. crenatum* the anthers do not project beyond the mouth of the corolla, which they do in *B. proliferum*, Bojer (t. 5147).

B. crenatum is a native of Central Madagascar, where it was first collected by Mr. Lyall, who sent specimens to Sir W. Hooker sixty years ago. More recently it has been collected by the Rev. R. Baron, in 1881–2, and by Mr. Scott Elliot at Angalampena. A living plant was presented to the Royal Gardens, Kew, in 1900, by Messrs. Vilmorin, which is now five feet high, in the Succulent House.

Descr.—*Stem* stout, erect, cylindric, trichotomously branched above. *Leaves* opposite, long-petioled, succulent, two and a half to three inches long, oblong or ovate-oblong, sinuate-crenate, tip rounded, base cordate, biauriculed by the usually incurved basal lobes, bright green, with three to five nerves on each side of the midrib which is very stout beneath; floral leaves small, linear; petiole one to two inches long, stout, terete. *Cymes* corymbiform, lax-flowered; pedicels slender, decurved. *Flowers* nodding, orange-red, about two-thirds of an inch long. *Calyx* inflated, globose, four-toothed, teeth deltoid. *Corolla-tube* twice as long as the calyx, or more, lobes four, oblong, tips rounded. *Stamens* unisereate; anthers included. *Disk-glands* minute. *Styles* slender, about as long as the cells of the carpels.—*J. D. H.*

Fig. 1, corolla laid open; 2 and 3, anthers; 4, pistil:—*all enlarged.*

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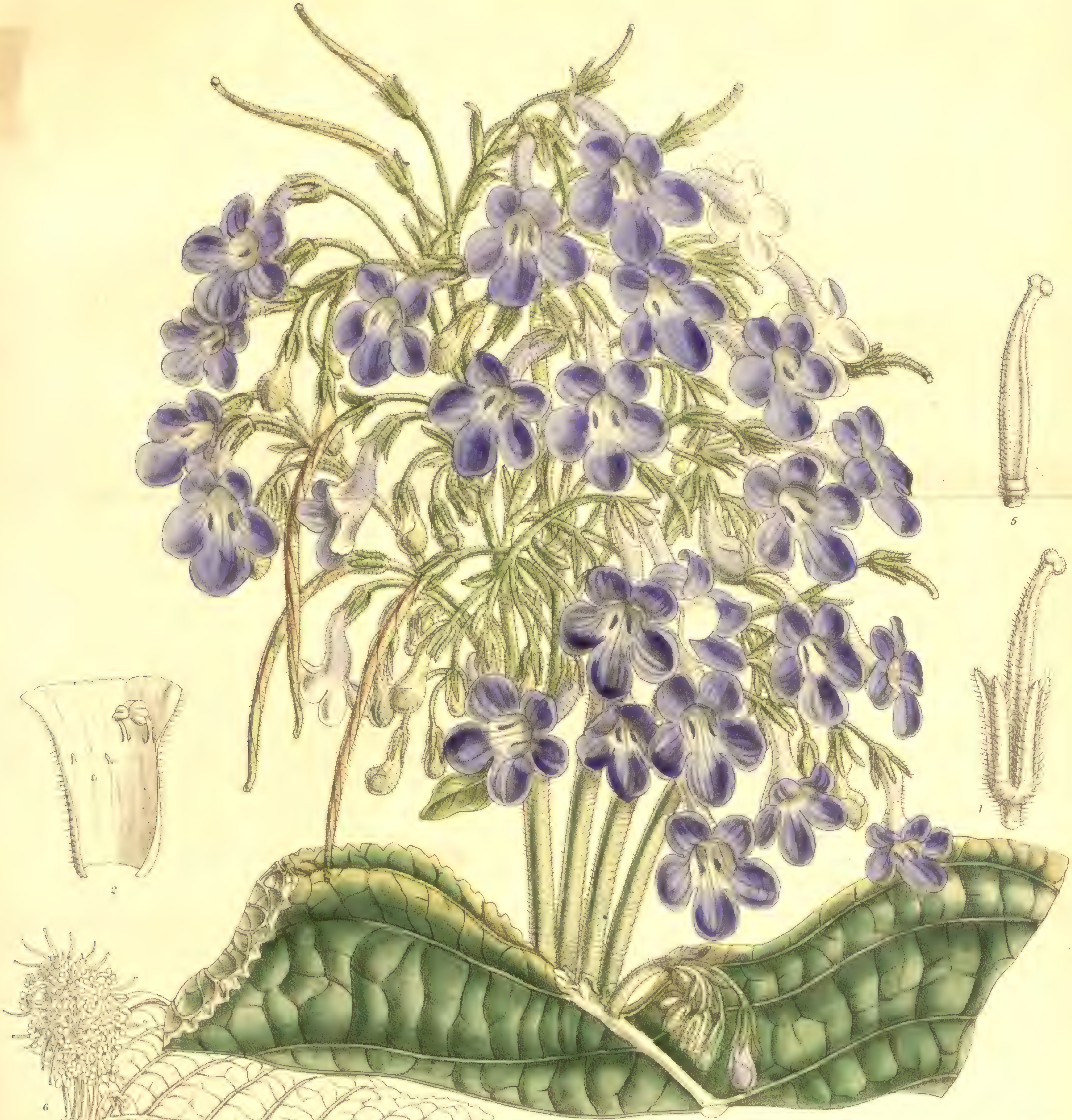

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TAB. 7857.

STREPTOCARPUS MAHONI.

Native of British Central Africa.

Nat. Ord. GESNERACEÆ.—Tribe CYRTANDREÆ.

Genus STREPTOCARPUS, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1023.)

STREPTOCARPUS *Mahoni*; acaulis, monophyllus, folio amplo pedali terræ appresso ovato-oblongo crenulato basi subcordato apice rotundato glabro v. parce piloso multinervi inter nervos rugoso supra læte viridi subtus pallidiore, scapis secus basin costæ seriatim evolutis confertis 4–6-pollicaribus robustis dense pilosis, cymis compositis multifloris, ramis ramulisque decurvis v. pendulis calycibusque pilosis, sepalis ⅓ poll. longis linearibus, corollæ violaceæ tubo ⅔ poll. longo pubescente decurvo supra medium inflato, limbi lobis rotundatis, lobis labii superioris paullo minoribus, filamentis brevibus curvis uno latere sparsim glanduloso-pilosis, antherarum loculis ovoideis divaricatis, ovario pubescente, stigmate 2-lobo, capsulis 2½-pollicaribus gracilibus pendulis pubescentibus.

S. Mahoni, *Hook. f.*

Streptocarpus Mahoni is allied to *S. Saundersii*, Hook., of Natal, figured at tab. 5251 of this work, in habit and inflorescence, but does not appear to attain the dimensions of that majestic species, nor has it the dark, rose-red undersurface of the leaves. It further differs from *S. Saundersii* in the much more compound and pendulous cymes, and in the violet-blue colour of the flowers, the more slender tube and broader lobes of the corolla, and in the almost sessile stigma. Twenty-three species of *Streptocarpus* are enumerated in the "Index Kewensis," and twelve have been figured in the *Botanical Magazine*, all South African, except *S. Mahoni* and two others from tropical East Africa; while two others (*S. caulescens*, Vatke, t. 6814, and *S. Kirkii*, Hook. f. t. 6782) differ remarkably from the rest in having erect stems with solitary axillary cymes. The ten South African species are *S. Rexii*, Lindl. (*Didymocarpus Rexii*, t. 3005; *S. polyanthus*, Hook. t. 4850; *S. Gardenii*, Hook. t. 4862; *S. Saundersii*, Hook. t. 5251; *S. Dunnii*, Hook. t. 6903; *S. lutea*, Clarke? (*S. parviflora*, t. 6636, *non* Meyer); *S. parviflora*, Mey. t. 7036; *S. Galpini*, Hook. f., t. 7230; *S. Wendlandii*, Hort. Damm. t. 7447, and the subject of this plate.

OCTOBER 1ST, 1902.

There are eight Madagascar species described, but the genus is otherwise Continental African.

S. Mahoni was raised from seed sent to the Royal Gardens, Kew, by Mr. John Mahon, Assistant Curator of the Botanic Station, Uganda. It flowered in the Succulent House in June, 1900, and died after flowering, as do all the monophyllous species of the genus so far as is known.

Descr.—Stemless. *Leaf* solitary, a foot or more long, appressed to the ground, sessile, ovate-oblong, crenulate, tip rounded, base cordate, many-nerved, bullate between the nervules, pale green beneath. *Scapes* many, crowded in one series on the base of the costa of the leaf, stout, erect, densely pilose. *Cymes* much-branched, effuse; branches and branchlets and pedicels decurved and pendulous, densely pilose, as is the calyx. *Flowers* long-pedicelled. *Calyx-segments* one-third of an inch long, decurved, pubescent, inflated below the mouth; limb an inch broad; lobes violet-blue, orbicular. *Filaments* very short, glandular-hairy on the convex side; anther-cells divaricate. *Ovary* pubescent; style very short. *Capsule* two and a half inches long, very slender, pendulous, pubescent.—*J. D. H.*

Fig. 1, calyx and pistil; 2, tube of corolla laid open; 3 and 4, stamens 5, pistil:—*all enlarged*; 6, *reduced* figure of whole plant.

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TAB. 7858.

ANEMONE CERNUA.

Native of Manchuria and Japan.

Nat. Ord. RANUNCULACEÆ.—Tribe ANEMONEÆ.

Genus ANEMONE, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 4.)

ANEMONE (Pulsatilla) *cernua*; herba 6–10-pollicaris sericeo-pilosa v. villosa, rhizomate lignoso erecto, foliis radicalibus longe gracile petiolatis late ovatis pinnatisectis, segmentis 2–3-jugis oppositis pollicaribus late ovatis oblongisve inciso-lobatis basi cuneatis, involucri foliolis sessilibus trisectis, laciniis demum patulis linearibus subacutis obtusisve apicibus sæpe trifidis v. trilobis lobis inæqualibus, pedunculo laxe sericeo-tomentoso, flore cernuo late campanulato 1½–2 poll. lato sepalis ovato-oblongis obtusis intus pallide v. saturate brunneo-rubris dorso pallidis dense sericeis, staminibus numerosissimis, stylis azureis, carpellis maturis 1½–2 poll. longis longe sericeo pilosis.

A. cernua, *Thunb. Fl. Jap.* p. 238. *DC. Prodr.* vol. i. p. 16. *Miquel, Ann. Mus. Bot. Lugd. Bat* vol. iii. (1867) p. 2. *Franch. & Sav. En. Pl. Jap.* vol. i. p. 4. *Baker & Moore in Journ. Linn. Soc.* vol. xvii. (1879) p. 376. *Hemsl. in Journ. Linn. Soc.* vol. xxiii. (1883) p. 10. *Somoku Zusetzu,* vol. x. fol. 36. *Honzo Zufu,* vol. vi. fol. 23.

The genus *Anemone* presents flowers of many colours, in both the xanthia and cyanic series, from red to blue, but no other species known to me shows the remarkable disposition of colour seen in the variety of *A. cernua,* here figured, in which the inner surface of the sepals is red-brown, the anthers yellow, and the styles blue. The genus (including *Pulsatilla* and *Hepatica*) appears to be exceptionally large in Japan, twenty-three species being enumerated by Franchet and Savatier as natives of that Archipelago, which is rather more than inhabit Europe. Ledebour enumerates twenty-six as natives of the Russian dominions; fifteen are described in the "Flora of British India."

A. cernua is a native of the Island of Nipon, Japan, in open sunny situations, as also of the Island of Saghalin, of Corea, and is found all over Manchuria. It varies greatly in size, in the greater or less abundance of the beautiful soft, white, silky hairs that clothe it, and in the darker or lighter colour of the sepals. The specimen figured was procured from Mr. Max Leichtlin in 1900;

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it flowered in the Alpine House of the Royal Gardens, Kew, in April, 1902.

Descr.—Whole plant clothed with soft, white, spreading hairs. *Rootstock* erect, woody, sometimes as thick as the middle finger. *Radical leaves* with the slender petiole a few inches to a span long, broadly ovate, pinnatisect; segments two or three pairs, opposite, about an inch long, broadly ovate or oblong, sessile or shortly petiolulate, inciso-lobate and coarsely toothed, base cuneate; involucral leaves sessile, pinnatifid; segments linear, sub-acute or obtuse, trifid to multifid. *Peduncles* long, one-flowered. *Flower* nodding, very variable in size, one to two inches in diameter. *Sepals* ovate, obtuse, spreading, pale purplish externally, and there clothed with long, silky hairs, glabrous and dark red-brown within. *Stamens* crowded, anthers yellow. *Styles* dark violet-blue. *Fruit* of many achenes, the ovary and long slender styles clothed with long, silky hairs.—*J.D.H.*

Figs. 1 and 2, stamens; 3, immature achene:—*all enlarged.*

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Tab. 7859.

MASDEVALLIA Schrœderiana.

Native of Peru?

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Masdevallia, *Ruiz & Pav.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 429.)

Masdevallia (Coriaceæ) *Schrœderiana*; folio 5–6-pollicari crasse coriaceo oblongo-lanceolato apice 3-denticulato dorso carinato basi in petiolum vaginatum angustato saturate viridi, vaginis ½–1-poll. longis membranaceis, pedunculo foliis paullo longiore basi vagina folii inclusa, gracili erecto viridi 1-floro, bractea ¾ poll. longa tubulosa appressa pallide viridi, floribus subdecurvis, perianthii tubo ½-pollicari aurantiaco purpureo tincto, sepalis sanguineo-purpureis obtuse 3-carinatis in caudas 2½ poll. longas filiformes recurvas aureas abrupte constrictis, dorsali porrecto ½ poll. longo triangulari-ovato, lateralibus recurvis dorsali 2–3-plo longioribus ovatis dimidiato albis et sanguineis, petalis ¼ poll. longis carnosis spathulato-oblongis obtusis pallide roseis punctatis, labello petalis paullo longiore oblongo basi hastato medio paullo constricto, disco medio obtuse bicarinato apice recurvo roseo-punctato.

M. Schrœderiana, *Hort. Sander, ex Gard. Chron.* 1890, vol. ii. p. 51. *Woolw. Masdevall.* p. 143, t. 56. *Journ. Hortic.* 1890, p. 557, fig. 74. *Cogn. Dict. Ic. Orchid.* t. 16.

M. fulvescens, *Rolfe in Gard. Chron.* 1890, vol. ii. p. 325, fig. 65, *Woolw. l.c.* p. 135, t. 52, forma colore florum pallidiore.

Of *Masdevallia* upwards of thirty species have been figured in this Magazine; of which, *M. Wageneriana*, Lindl., in 1856 (t. 4921) was the first of the many now introduced into Europe in a living state, for *M. fenestrata*, Lindl., t. 4164 (*Cryptophoranthus atropurpureus*, Rolfe) is not a congener. No fewer than 175 species are enumerated in the "Index Kewensis" as known up to the year 1885, and to that may probably be added as many described since, which would bring the total up to 200. About ninety species are figured by Miss Woolward in the Marquis of Lothian's sumptuous work, "The Genus Masdevallia"; the cessation of which is greatly to be regretted, for without such plates, accompanied by analyses, it is impossible to study the genus satisfactorily.

M. Schrœderiana differs much from any species previously described; it was imported by Messrs. Sander & Co. of St. Albans, who inform me that it was sent by their collector, Mr. Hubsch, probably in 1884, and, as far as they can

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recollect, from Peru. On the other hand, according to Miss Woolward, *M. fulvescens* was imported from New Grenada in 1890 by Messrs. Horsman & Co. of Colchester, and has become very popular. The specimen figured was presented to the Royal Gardens, Kew, by Mr. F. W. Moore, A.L.S., Keeper of the Royal Gardens, Glasnevin, in 1893. It flowers annually in a cool house. The flowers vary a good deal in colour.

Descr.—*Stems* tufted. *Leaf* five to six inches long, thickly coriaceous, oblong-lanceolate, minutely three-toothed at the tip, base narrowed into a short petiole; scape rather longer than the leaf, emerging from the short, cylindric, membranous sheath at the base of the leaf, slender, terete, one-flowered. *Flowers* nodding. *Perianth* tube about half an inch long. *Sepals* abruptly contracted into a slender, recurved, bright yellow tail; dorsal half an inch long, oblong, arched; lateral twice as long, ovate, connate, strongly recurved, thickly three-nerved, dimidiately white and red, bullate, and with a white streak on the red portion. *Petals* oblong-spathulate, fleshy, obtuse, rather longer than the column. *Lip* oblong, rather longer than the petals, base hastate.—*J. D. H.*

Fig. 1, flower with the sepals removed; 2, lip and column; 3, anthers; 4, pollinia:—*all enlarged.*

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TAB. 7860.

GLADIOLUS MACKINDERI.

Native of British East Africa.

Nat. Ord. IRIDEÆ.—Tribe IXIEÆ.

Genus GLADIOLUS, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 709.)

GLADIOLUS (Homoglossum) *Mackinderi*; caule gracili bipedali laxe folioso, foliis anguste linearibus inferioribus pedalibus $\frac{1}{6}$–$\frac{1}{4}$ poll. latis acuminatis rigidis subglauco-viridibus, costa concolore valida, spica 6-pollicari 5–6-flora, spathis oblongo-lanceolatis acutis herbaceis convolutis infima $1\frac{1}{2}$-pollicari, floribus secundis, perianthii tubo 1–$1\frac{1}{2}$-pollicari aureo, segmentis consimilibus, sessilibus late ovato-orbicularibus apicibus rotundatis concavis coccineis exterioribus paullo majoribus, staminibus segmentis triente brevioribus flavis, antheris ad $\frac{1}{6}$ poll. longis basi et apice breviter bilobis.

The genus *Gladiolus* is a characteristic feature of the hilly and mountainous country of Eastern tropical Africa, whence about thirty-five species have been obtained, all but two of these endemic; the two exceptions being found also on the Western side of the continent, whence ten species have been described. From the data given by Mr. Baker in the "Flora of Tropical Africa," the elevation the genus affects in tropical Africa is two thousand to eleven thousand feet. The species most closely allied to *G. Mackinderi* is *G. Watsonioides*, Baker, t. 6919; a much taller and longer-leaved plant, with flowers two inches broad, ovate, flat, sub-acute perianth-segments and sagittate anthers. It was found on Kilimanjaro, at elevations of eight thousand five hundred feet to eleven thousand feet by Mr. Thomson and Sir Harry Johnston, who sent seeds of it to Kew, from which plants were raised that flowered in 1886. According to Mr. Baker, *G. Watsonioides* is also a native of alpine pastures on Kenia, at ten thousand to eleven thousand feet elevation, whence I have not seen specimens.

Mr. Baker, in the *Fl. Trop. Afr.* vii. 374, refers his *G. Watsonioides* to the section *Homoglossum* of *Antholyza*, characterized by the equal or sub-equal segments of the perianth. But section *Homoglossum* appears to me to be referable to *Gladiolus* (in which it is placed in his "Hand-

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book of Irideæ," p. 226, as a sub-genus), of which it has the large bracts, and funnel-shaped perianth not suddenly contracted into a slender stipes as in the typical species of *Antholyza*, of which examples are figured, under *Gladiolus*, namely, *A. æthiopica*, L., t. 561, *A. quadrangularis*, Gawl. t. 567, and *A. æthiopica*, L., var. *vittigera*, Salisb. t. 1172.

Seeds of *G. Mackinderi* were procured at an elevation of ten thousand feet on Mt. Kenia by Professor Mackinder, of Christ Church, Oxford, during his ascent, in 1900, of that remarkable mountain; plants raised from which flowered in a greenhouse in August, 1901.

Descr.—*Stem* about two feet high, slender, laxly leafy. *Leaves* narrowly linear, the lower about a foot long, and one-sixth to one-fourth of an inch broad, rigid, rather glaucous green, midrib stout. *Spike* six inches long, secund, five- to six-flowered. *Bracts* oblong-lanceolate, acute, the lower an inch and a half long. *Perianth-tube* longer than the bracts, narrowly infundibular, yellow; limb an inch and a half broad, scarlet; segments broadly orbicular-ovate, concave, all nearly equal, the three inner rather shorter than the outer. *Stamens* about one-third shorter than the perianth-segments, yellow; anthers one-sixth of an inch long, base and apex shortly bifid.—*J. D. H.*

Figs. 1 and 2, anthers; 3, stigma:—*all enlarged.*

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TAB. 7861.

IRIS LEICHTLINI.

Native of Bokhara.

Nat. Ord. IRIDEÆ.—Tribe MOREÆ.

Genus IRIS, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 686).

IRIS (Regelia) *Leichtlini*; rhizomate valido repente, caule 1–1½ poll. alto valido monocephalo basi folioso, foliis 1–1½ ped. longis ad ½ poll. latis ensiformibus obtusis sat. firmis pallide viridibus plus minusve glaucescentibus marginibus hyalinis, spathæ valvis 2–3 poll. longis oblongo-lanceolatis herbaceis apicibus scariosis 2–3-floris, floribus breviter pedicellatis, perianthii tubo ovario longiore ad 1½ poll. longo tereti a basi ad apicem sensim ampliato, limbi segmentis subæqualibus cuneato-obovatis apice rotundatis undulatis marginibus crispatis a basi ad medium flavo-barbatis medio violaceis venis saturatioribus pictis, lateribus late brunneis, exterioribus a medio recurvis, interioribus erectis, styli ramis oblongis perianthii lobis dimidio brevioribus cristis brunneis apice bifidis, antheris valde elongatis anguste linearibus filamentis pluries longioribus.

I. Leichtlini, *Regel in Act. Hort. Petropol.* vol. viii. (1884) p. 680; *Descr.* vol. ix. p. 40. *Baker, Handb. of Irideæ*, p. 20.

I. vaga, *Fost. ex Regel, Gartenfl.* p. 201, 672, t. 1244, f. 7.

Iris Leichtlini is very closely allied to *I. Eulefeldi*, Regel (tab. 6902), a species referred to by Baker as a variety of *I. scariosa*, Willd. ("Handb. of Irideæ," p. 32), which differs notably in the plane margins of the perianth-segments and bipartite crests of the style-arms. *I. Korolkovi*, Regel. (tab. nostr. 7025), is another nearly allied plant, but it differs from *I. Leichtlini* by the same characters of perianth-segments and style-arms as does *I. Eulefeldi*. All three are natives of Russian Turkestan, and are variable in colour, but *I. Leichtlini* is the most beautifully variegated of the three, and is the only one of them (as far as yet figured) with brown and violet perianth-segments.

Central Asia is probably the head-quarters of the genus *Iris*, about thirty species are enumerated by Baker as inhabiting this region, whence, and especially from Tibet and the regions bordering China, many novelties may be expected; about forty species are European, sixteen Himalayan.

OCTOBER 1ST, 1902.

Plants of *I. Leichtlini* were purchased for the Royal Gardens, Kew, in 1893, from Messrs. Herb and Wulle, of Naples, which flowered in an open border in May. It was introduced into cultivation by Dr. Regel, of the Imperial Botanic Gardens of St. Petersburgh, who received it from Bokhara, where it was found by Korolkov.

Descr.—Whole plant twelve to eighteen inches high. *Rootstock* stout, creeping. *Stem* leafy at the base, simple, bearing one head of two to three flowers. *Leaves* about as long as the stem, half an inch broad, ensiform, obtuse, pale green, more or less glaucous. *Valves of spathe* two to three inches long, herbaceous, with scarious tips. *Flowers* very shortly pedicelled. *Perianth-tube* an inch and a half long, terete, gradually dilated from base to tip; segments of limb sub-equal, three inches long, cuneate-obovate, all with a narrow beard of yellow hairs from the claw to about the middle; margins undulate and crisped, tips rounded, violet-blue in the middle, with broadly, copper-coloured margins and darker veins, outer segments recurved from the middle, inner erect. *Anthers* very long and slender. *Style-arms* half as long as the perianth-segments, erect, ovate, tip bifid.—*J. D. H.*

Fig. 1 and 2, anthers; 3, upper part of style-arm with crest:—*all enlarged.*

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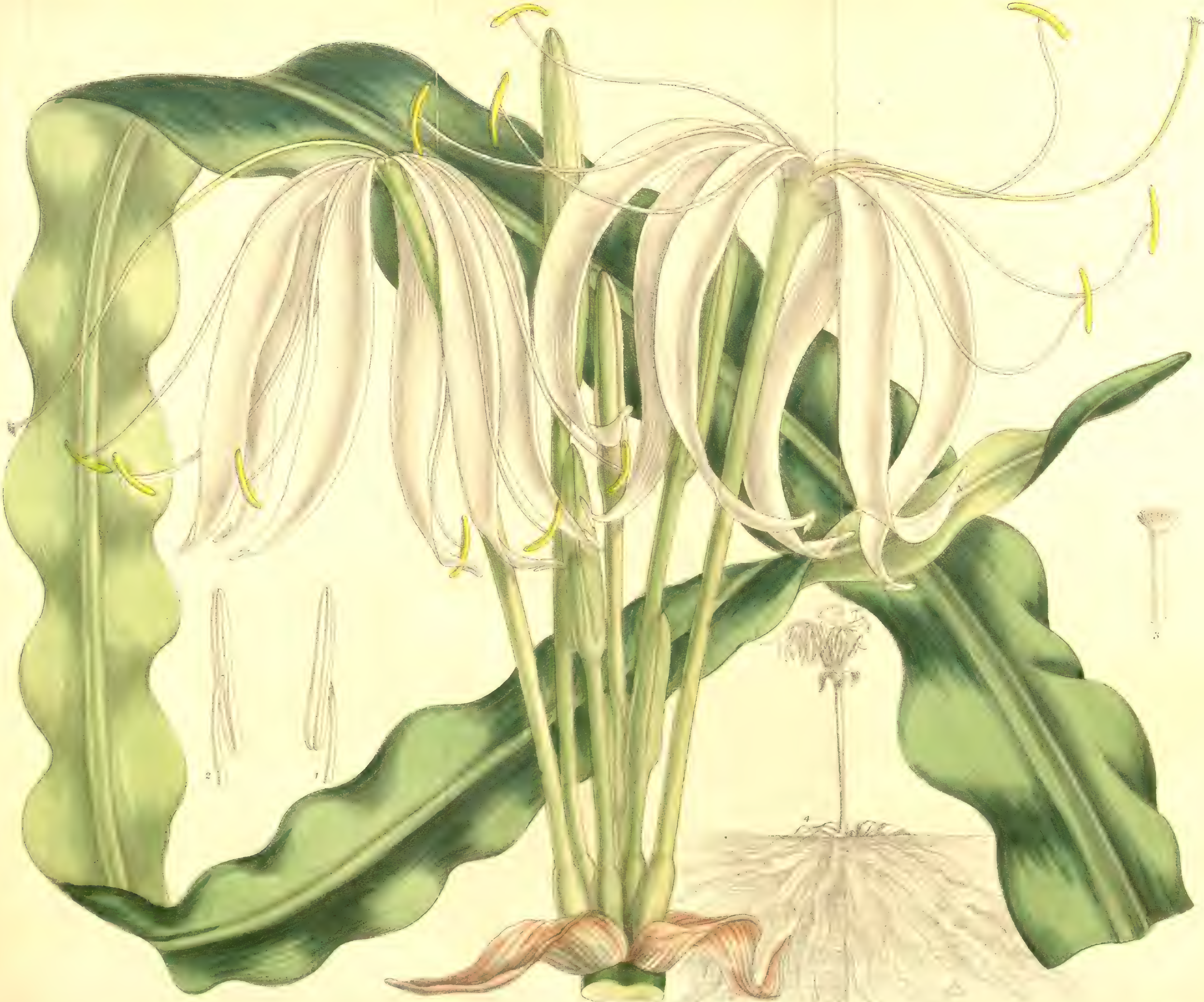

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TAB. 7862.

CRINUM NATANS.

Native of Guinea.

Nat. Ord. AMARYLLIDEÆ.—Tribe AMARYLLEÆ.

Genus CRINUM, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 726.)

CRINUM (Platyaster) *natans*; herba aquatica, bulbo parvo anguste ovoideo estolonifero, collo elongato, foliis submersis loratis 4–5-pedalibus 1½ poll. latis apice angustatis subacutis undulatis supra saturate subtus pallide viridibus, costa crassa utrinque prominula, scapo robusto pedali erecto compresso, spathæ valvis 2½-pollicaribus ovato-lanceolatis membranaceis coloratis, floribus umbellatis erectis, ovario ¾-pollicari oblongo, corollæ tubo 6-pollicari cylindraceo pallide viridi, segmentis tubo dimidio brevioribus patenti-reflexis anguste lineari-lanceolatis falcatis subacutis albis, filamentis filiformibus segmentis corollæ fere æquilongis, antheris ½ poll. longis anguste linearibus aureis, styli parte exserto filamentis paullo longiore ascendente sigmoideo, stigmate fimbriato.

C. natans, *Baker in Dyer, Fl. Trop. Afr.* vol. vii. p. 396.

Crinum natans, the only hitherto described species with submerged leaves, is very closely allied to *C. purpurascens*, Baker, t. 6525, a native of the same region of Africa, and described as amphibious. *C. purpurascens* differs in being a much smaller plant, with narrower, less undulate leaves, having an undefined costa, a much more slender scape and perianth-tube, which latter is purplish below the middle and yellow above it, shorter perianth-segments, rose-purple filaments, and green anthers. It is apparently a more local plant, being confined to the Bight of Biafra, whereas *C. natans* has been found in Fernando Po, where it was discovered by G. Mann in 1862, in the Niger Delta, Gold Coast, and Sierra Leone, always in gently flowing fresh-water streams. Sir John Kirk, who collected it in the Niger waters in 1895, and sent bulbs and seeds to the Royal Gardens, Kew, describes it as affecting the margins of rivers with an average temperature of 80°—82° Fahr. The bulbs which he sent in that year flowered in a tropical tank in September, 1900.

Descr.—*Bulb* about three or more inches long, narrowly ovoid, tapering into a long neck, not stoloniferous. *Leaves* very numerous, submerged, four to five feet long by one and a half to two inches broad, sessile, strap-shaped, strongly waved on both sides of the stout, broad, well-defined midrib, which is prominent on both surfaces, deep green above, pale beneath, tip narrowed to a sub-acute point. *Scape* a foot high, stout, compressed, three-quarters of an inch broad. *Spathe-valves* two and a half inches long, ovate-lanceolate, pale brown. *Flowers* umbellate, erect, sessile. *Ovary* half to three-quarters of an inch long, narrowly oblong. *Perianth-tube* six inches long, cylindric, pale green; segments half as long as the tube, spreading and recurved, narrowly linear-lanceolate, falcate. *Filaments* spreading, rather shorter than the perianth-segments, slender, white; anthers narrow, yellow. *Style* very slender, declinate, then upcurved, rather longer than the filaments.—*J. D. H.*

Figs. 1 and 2, anthers; 3, upper part of style and stigma:—*all enlarged*; 4, *reduced* view of whole plant.

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TAB. 7863.

CYMBIDIUM SIMONSIANUM.

Native of Sikkim and Assam.

Nat. Ord. ORCHIDEÆ.—Tribe VANDEÆ.

Genus CYMBIDIUM, *Sw.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 536.)

CYMBIDIUM (Eucymbidium) *Simonsianum*; epiphyticum, foliis 2–3-pedalibus sessilibus anguste linearibus ad ½ poll. latis acutis v. acuminatis basi non dilatatis, pedunculo breviusculo decurvo basi vaginis striatis distichis imbricatis 1–2-pollicaribus instructo, racemo pendulo laxe 10–12-floro, bracteis subulatis appressis ¼ in. longis, pedicellis cum ovariis 1–1½ poll. longis, floribus odoratis, sepalis patulis lineari-oblongis subgriseo-albis fascia media sanguinea ornatis, petalis sepalis consimilibus et concoloribus sed paullo minoribus, labello sepalis dimidio breviore lobis sanguineo ornatis lateralibus brevibus columnæ æquilongis obtusis, intermedio revoluto ovato apiculato, disco inter lobos laterales 2-carinato, carinis glanduloso-pilosis, columna atro-purpurea, polliniis obtuse deltoideis sessilibus glandula brevi lata.

C. Simonsianum, *King & Pantl. in Journ. As. Soc. Beng.* lxiv. pars II. (1895) p. 338, *et Ann. Bot. Gard. Calcutta*, vol. viii. (1898) p. 188, tab. 250.

According to King and Pantling in the works cited above, *Cymbidium Simonsianum* was discovered in Assam by the late Dr. J. C. Simons, who sent very large collections both to the Botanical Gardens of Calcutta and to Sir W. Hooker in 1830–40. It has since been found at the foot of the Sikkim Himalaya, in the Teesta Valley, by Mr. Pantling, flowering in August. It is well described in the Annals of the Royal Botanic Gardens of Calcutta, except that the pollinia are described as falcately ovoid, with a narrow gland (rather strap), whereas in the drawing, figs. 6 and 7, they precisely resemble those represented in our plate, figs. 3 and 4. Its nearest ally is *C. longifolium*, Don, a native of the sub-tropical Himalaya from Kumaon eastward, and of the Khasia Mts., which has a broader midlobe of the tip spotted with red. The plant here figured was purchased as *C. Dayanum* for the Royal Gardens, Kew, from Messrs. Barr & Sons, Covent Garden, in 1900, with other Orchids, said to have come from Japan. It flowered in a cool house in October, 1901, and was sweet-scented.

Descr.—Leaves sessile, very narrowly linear, two to three feet long, by about half an inch broad, narrowed into a sub-acute point, base not dilated. *Peduncle* short, decurved, clothed with imbricating, distichous, oblong, acute, cymbiform sheaths, one to two inches long. *Raceme* pendulous, loosely ten- to twenty-flowered. *Bracts* small, subulate. *Pedicels* with the ovary one to one and a half inch long. *Flowers* two inches broad. *Sepals* and *petals* spreading and recurved, linear-oblong, acute, similar in form and colour, but the petals smaller, greyish white, with a blood-red, central streak. *Lip* about half as long as the sepals; side-lobes short, rounded, as long as the column, white, streaked with blood-red; terminal ovate, revolute, white with a yellow blotch, disk with two glandular-hairy ridges between the side-lobes.—*J. D. H.*

Fig. 1, lip with one side-lobe removed; 2, column; 3 and 4, pollinia:—*all enlarged.*

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TAB. 7864.

CATASETUM QUADRIDENS, ♂.

Native country?

Nat. Ord. ORCHIDEÆ.—Tribe VANDEÆ.

Genus CATASETUM, *Rich.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 551.)

CATASETUM *quadridens*; pseudobulbis ovoideis annulatis 3–5-phyllis, foliis 6–12-pollicaribus oblongo-lanceolatis acuminatis 3-nerviis basi angustatis læte viridibus, *infl. masc.* scapo robusto pauci-vaginato cum racemo multifloro decurvo pedali, rhachi robusta, floribus secundis ascendentibus, bracteis lanceolatis ½ poll. longis pedicellis robustis duplo longioribus appressis, sepalis petalis conformibus pollicaribus oblongis acuminatis viridibus maculis magnis atro-purpureis ornatis, sepalo dorsali erecto, lateralibus deflexis, petalis erectis sepalo dorsali oppositis, labello sepalis paullo breviore breviter unguiculato lamina inflexa aurea purpureo punctata ovata infra apicem obtusum angustata, marginibus infra medium fimbriato-dentatis, disco supra basin umbonato infra medium depresso, columna clavata ¾ poll. longa rostrata, clinandrio antice 2-dentato, rostelli antennis subulatis incurvis, anthera rostrata, polliniis ellipsoideis, stipite lineari marginibus incurvis, glandula quadrata.

C. quadridens, *Rolfe in Kew Bulletin*, 1901, p. 149; app. III. 1902, p. 80.

Of this remarkably beautiful Orchid, the male plant only is known. It was first described in 1898 by Mr. Rolfe, from a plant purchased by the Royal Gardens, Kew, at the sale of the Hon. Walter Rothschild's collection, and it flowered in December of that year. The said plant appears to have been a very poor one, for the leaves were only about six inches long, and the sub-erect scape bore four flowers. That here figured was bought for the Royal Gardens at an auction in 1900. It flowered in the Tropical Orchid House in February of this year. Its native country is unknown. Mr. Rolfe regards it as nearest in affinity to *C. cornutum*, Lindl., Bot. Reg. vol. xxvi. (1840) Misc. p. 77, and xxvii. t. 5, fig. 2 (flower)—a native of Demarara. According to Lindley's description and figure of the flower of *C. cornutum* the two species are very closely allied indeed, the chief difference being, that Lindley describes the lip as green, with the whole margin broken up into slender processes, and bearing a strict inflexed spur at the base, and that he does not describe any teeth on the clinandrium.

NOVEMBER 1st, 1902.

Since the foregoing was set up I have learnt that the same plant has produced a female inflorescence, but the flowers are not quite fully developed. They are green, and apparently present similar differences from the male as those of *C. Randii*, Rolfe, plate 7470.

Descr.—*Pseudobulbs* ovoid, annulate, three to five-leaved. *Leaves* six to twelve inches long, oblong-lanceolate, acuminate, with three principal nerves, base narrowed into a short, concave petiole. *Peduncle* stout, decurved, together with the secund raceme about a foot long; rhachis of raceme very stout. *Bracts* half an inch long, lanceolate. *Pedicels* twice as long as the bracts. *Flowers* two inches long across the sepals, which are sub-equal, oblong, acute, the dorsal erect, the lateral deflexed, all pale green, with large, dark, red-purple blotches. *Petals* erect, placed opposite to the dorsal sepal, and of the same size, shape, and colour. *Lip* shorter than the sepals, shortly clawed, broadly ovate, decurved, golden-yellow, speckled with dark purple, margins fimbriate-dentate; disk saccate at the base, depressed about the middle. *Column* an inch long, very stout, with a long, incurved beak; antennæ subulate, deflexed, incurved. *Anther* with a long obtuse beak.—*J. D. H.*

Fig. 1, column; 2, anther; 3 and 4, pollinia:—*all enlarged*; 5, *reduced* view of whole plant.

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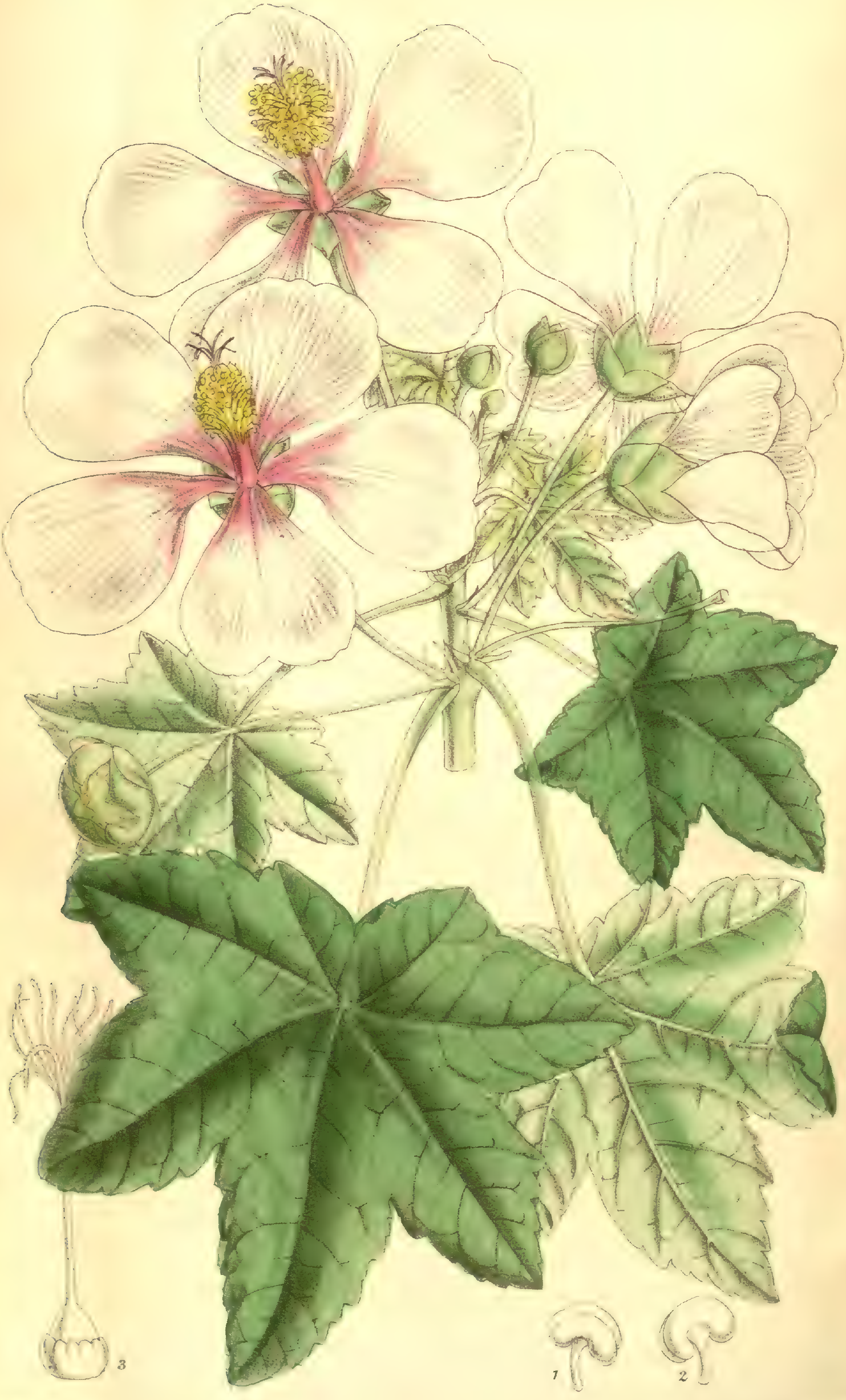

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TAB. 7865.

LAVATERA ACERIFOLIA.

Native of the Canary Islands.

Nat. Ord. MALVACEÆ.—Tribe MALVEÆ.

Genus LAVATERA, *Linn.*; (*Benth. & Hook.f. Gen. Plant.* vol. i. p. 200.)

LAVATERA (Olbia) *acerifolia*; frutex multicaulis 4–8-pedalis foliis longe petiolatis rotundatis 2–3 poll. latis 5- v. sub 7-lobis basi profunde cordatis sinu angusto lobis late ovatis obtusis v. subacutis crenato-dentatis supra glabrescentibus subtus stellato-tomentellis, stipulis setaceis, petiolo ½–2 poll. longo, floribus axillaribus solitariis v. rarius binis, pedicellis 1–1½ poll. longis gracilibus basi minute bibracteolatis infra florem articulatis, floribus 2–3 poll. diam., involucelli 5-lobi tomentelli lobis late ovatis acutis calyce brevioribus, calycis tomentelli lobis late ovatis acutis, petalis late spathulatim obovatis orbicularibusve retusis pallide lilacinis v. roseis basi sanguineis, staminum tubo pubescente, ovarii carpellis 12–15 orbicularibus stylo gracili stigmatibus filiformibus, capsula orbiculari complanata, coccis 12–16 orbiculari-oblongis ⅙ poll. longis margine acutis glabris chartaceis, columella in conum profunde sulcatum expansa.

L. acerifolia, *Cav. in Anal. Cienc. Nat.* vol. vi. (1803) p. 339; *Elench. Hort. Madrit.* p. 20. *Brouss. Elench. Hort. Monsp.* p. 84. *Lois. Herb. Amat.* vol. v. t. 322. *DC. Prodr.* vol. i. p. 438; *Cat. Hort. Monsp.* p. 121 (*Ic.* 56 *ined.*).

L. phœnicea, *Willd. Enum. Hort. Berol. Suppl.* p. 49 (*non Vent.*).

SAVINIONA acerifolia, *Webb et Berth. Phytogr. Canar.* vol. i. p. 31, t. 2 B.

Lavatera acerifolia is a native of moist places in the sylvan region of the Canary Islands, where it was first collected by Broussonet. There are specimens in the Kew Herbarium from the Grand Canary, Teneriffe, and Gomera. It was raised to generic rank by Webb and Berthelot, on quite insufficient grounds, under the name of *Saviniona*, in honour of Dr. Savinion, a physician of eminence in the Archipelago. The specimen figured was from a plant introduced from the Canaries into the Botanical Gardens of Cambridge by Walter Gardiner, Esq., F.R.S., Fellow and Bursar of Clare College, communicated by Mr. Lynch, A.L.S., in July of the present year.

Descr.—A shrub four to eight feet high, branching from the base; branches, leaves beneath, involucel and calyx stellately tomentose. *Leaves* orbicular, two or three inches in diameter, five- or almost seven-lobed, deeply cordate,

NOVEMBER 1ST, 1902.

with a narrow sinus, palmately five-nerved, minutely pubescent above; lobes variable in length, crenate-toothed, obtuse or sub-acute; stipules small, narrow, tomentose, caducous; petiole half an inch to two inches long. *Flowers* axillary, solitary or rarely binate, three inches in diameter; pedicel one and a half to two inches long, slender. *Involucel* three-lobed or -partite, segments ovate, acute, shorter than the five-lobed calyx. *Petals* broadly spathulately obovate, tips rounded, retuse, variable in colour, pale violet or rose-coloured, with crimson base and claw. *Ovary* twelve- to sixteen-celled; styles slender, stigmas filiform. *Capsule* orbicular, depressed, of twelve to sixteen thin coriaceous cocci, surrounding a central axis which is dilated at the top into a free, broad, deeply furrowed, peltate cone.—*J. D. H.*

Figs. 1 and 2, anthers; 3, pistil and disk:—*all enlarged.*

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Tab. 7866.

BAUHINIA acuminata.

Native of tropical Asia.

Nat. Ord. Leguminosæ.—Bauhinieæ.

Genus Bauhinia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 575).

Bauhinia (Pauletia) *acuminata*; frutex v. arbor parva, 8–10-pedalis, ramis patentibus, foliis bifariis 3–5 poll. longis ellipticis supra medium bifidis lobis obtusis acutisve 7–11-nerviis nervo medio apice excurrente basi rotundatis v. cordatis supra læte viridibus glaberrimis subtus primum pubescentibus, petiolo 3–4 poll. longo apice incrassato, stipulis anguste semisagittatis, racemis breviter pedunculatis extra-axillaribus terminalibusve paucifloris, pedicellis ½–¾ poll. longis bibracteatis et bibracteolatis, floribus inodoris calyce pollicari spathaceo viridi longe rostrato, rostro pubescente apice penicillato, petalis calyci æquilongis oblongis albis, staminibus 10, filamentis alternis brevioribus, antheris æqualibus, ovario angusto piloso longe stipitato, stylo ½ poll. longo incurvo, legumine stipitato 4–5 poll. longo lineari-oblongo plano margine 3-carinato 8–12-spermo, seminibus turgide ellipsoideis brunneis nitidis.

B. acuminata, *Linn. Sp. Pl.* p. 375. *Roxb. Fl. Ind.* vol. ii. p. 324. *Wight et Arn. Prodr. Fl. Penins. Ind. Or.* p. 295. *DC. Prodr.* vol. ii. p. 513. *Baker in Fl. Brit. Ind.* vol. ii. p. 276. *Kurz, For. Fl. Brit. Burm.* vol. i. p. 396. *Brandis, For. Flor. N. W. & Centr. Ind.* p. 159. *Miquel, Fl. Ned. Ind.* vol. i. Pars I. p. 74. *Hemsl. in Journ. Linn. Soc.* vol. xxiii. (1886) p. 212.

B. candida, *Ait. Hort. Kew.* ed. 1, vol. ii. p. 49; ed. 2, vol. iii. p. 23 (*non Willd.*). Velutta mandaru, *Rheede Hort. Malab.* vol. i. p. 61, t. 34. *Ham. in Trans. Linn. Soc.* vol. xiii. p. 497.

As is the case with many fine exotic plants cultivated more than a century ago in our tropical houses, and flowering there, *Bauhinia acuminata* has never been figured in any work since the publication of Rheede's "Hortus Malabaricus," that is since 1678. According to Aiton's "Hortus Kewensis" (1789), it was introduced from India into England by Dr. Francis Russell, F.R.S., and flowered at Kew in the months of May and June. In recent times it has been an occupant for many years of the Palm House in the Royal Gardens, but was never known to flower till October of last year. It is a plant of wide Asiatic distribution, being common in India from the lower Himalaya southward, and found in the Malay Peninsula, Burma, and China. It is not, however,

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indigenous in Ceylon. Trimen, in his "Flora of Ceylon," (ii. p. 116) says of it, "only known here in gardens, where it is an old introduction; there are specimens in Hermann's Herb., and he gives (Mus. 8) the native name of 'Mayilla' for them, which rightly belongs to *B. racemosa*, Lam." Roxburgh remarks that the pistil is often minute and abortive.

Descr.—A shrub or small tree, eight to ten feet high, with a short trunk, spreading branches, and grey-brown bark. *Leaves* bifarious, three to five inches long, elliptic, bifid nearly to the middle, lobes acute or obtuse, seven- to eleven-nerved, median nerve produced into a sharp point, glabrous and shining above, more or less downy beneath; petiole three to four inches long, swollen at the top, stipules semi-sagittate. *Flowers* solitary, or few in a short raceme, two and a half inches broad, pure white, shortly pedicelled; bracts and bracteoles minute. *Calyx* an inch and a half long, spathaceous, narrowed into a hairy beak, lacerate at the tip. *Petals* oblong, tips rounded. *Disk-glands* five, globose. *Stamens* ten; filaments alternately long and short; anthers equal. *Pistil* geniculate, ovary linear, hairy, narrowed into a slender stipes and beak. *Pod* stipitate, four to five inches long, linear-oblong, flat, smooth, glabrous, eight- to twelve-seeded, margins three-keeled. *Seeds* turgidly ellipsoid, brown, shining.—*J. D. H.*

Fig. 1, calyx, disk, and pistil; 2, and 3, anthers; 4, pod; 5, seed; all but fig. 4, *enlarged*.

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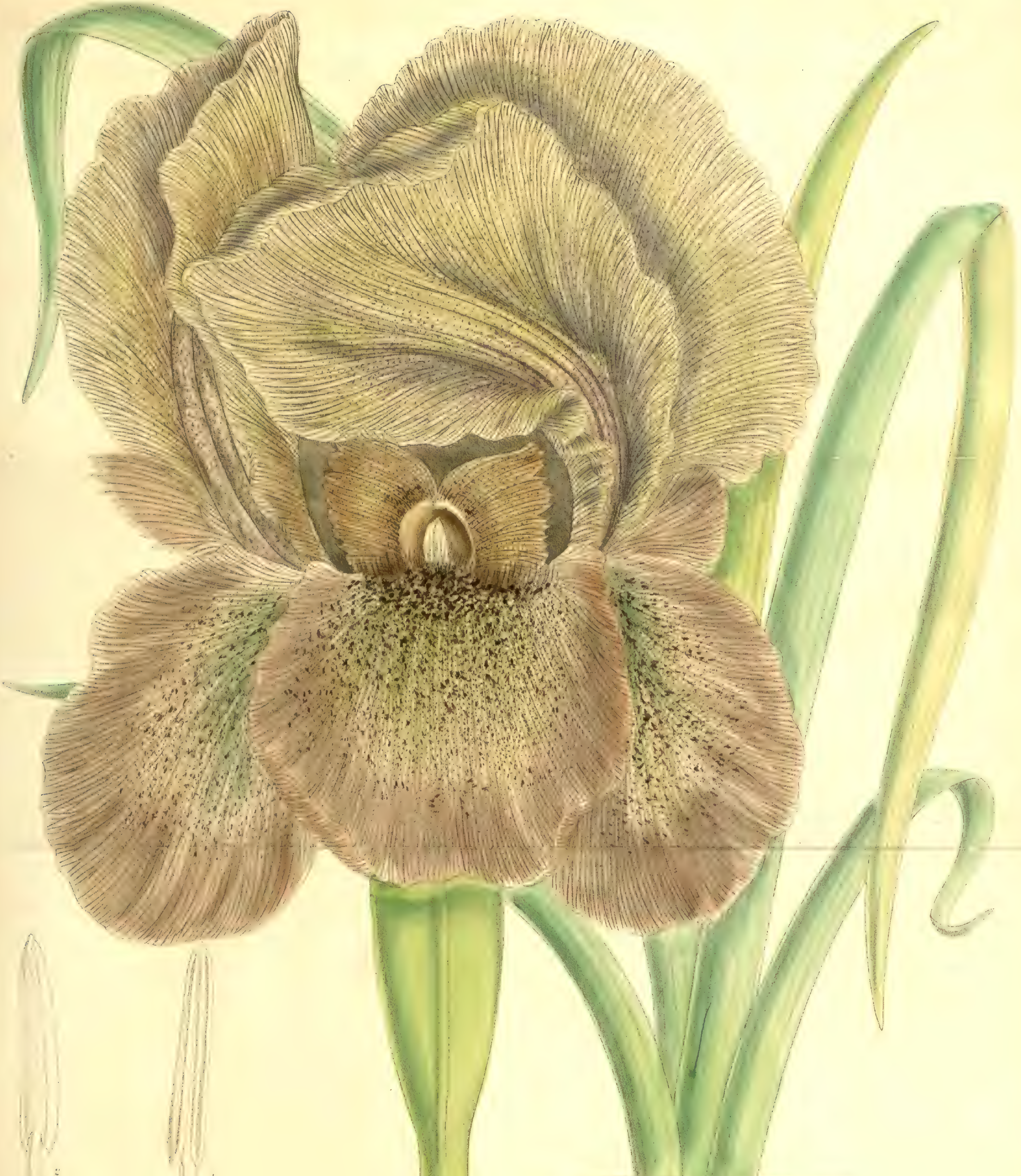

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TAB. 7867.

IRIS GATESII.

Native of Kurdistan.

Nat. Ord. IRIDEÆ.—Tribe MORÆEÆ.

Genus IRIS, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 686.)

IRIS (Oncocyclus) *Gatesii*; rhizomate crasso, foliis radicalibus 4–5, 1–1½ pedalibus ½–⅔ poll. latis linearibus acuminatis planiusculis pallide glauco-viridibus, caule 2–3-pedali robusto monocephalo, spathis 4–5-pollicaribus pallide viridibus, flore maximo, pedicello brevi, perianthii tubo brevi, segmentis exterioribus reflexis 3 poll. latis orbiculari-obovatis creberrime striolatis pallide roseo-lilacinis medio flavo suffusis striis punctis minutis discum versus majoribus conspersis, basi et ungue pilis erectis fusco-purpureis ornatis, segmentis interioribus longioribus erectis incurvis late obovatis disco albo-flavido margines versus pallide azureis azureo-punctatis et a basi ultra medium costis 3 purpurascentibus percurris, stylo 2-poll. lato bipartito segmentis quadratis divaricatis dentatis sinu acuto, capsula 5-pollicari.

I. Gatesii, *Fost. in Lecture on Iris, May 14th*, 1889, *ex Journ. Hort. Soc. Lond.* xi. (1890), p. 144, *nomen*; *in Gard. Chron.* 1890, vol. ii. p. 18, f. 3; *in Garden*, vol. xliii. (1893), p. 132 *cum ic. color., et ic. xylog. reduct. Micheli, in Bull. R. Soc. Tosc. Ort.* Ser. II. vol. vii. (1892), p. 296, t. 10; *in Rev. Hortic.* vol. lxiv. (1892), p. 302. *Baker, Handb. Irid.* p. 18.

In point of size of flowers, *I. Gatesii* is, as far as is at present known, the monarch of the Irises. It belongs to a section (*Oncocyclus*) of the genus conspicuous in this respect, of which five have been figured in this magazine, namely, *I. susiana*, Linn. t. 91; *I. Lortetii*, Barb. t. 7251; *I. Sari*, Schott. var. *lurida*, Boiss. t. 6960; *I. iberica*, Hoffm. t. 5847, and *I. paradoxa*, Stev. t. 7081. All of the section are Oriental, ranging from Asia Minor and Syria to Persia.

I. Gatesii was introduced into cultivation by Mr. Max Leichtlin, who obtained it from Mr. Sintenis, its discoverer in the mountains of Kurdistan, in Mesopotamia, near the town of Mardin, about sixty miles south of Diarbekir. It is named by Sir Michael Foster after his friend, the Rev. F. S. Gates, of the American Mission at that town. Mardin is described as situated on a lofty limestone hill, overlooking a large fertile plain, and is distinguished for the salubrity of its climate, and for containing substantially built Chaldean, Syrian, Catholic, Armenian, and Jacobite churches. It is not in Armenia (the hitherto reputed habitat of *I. Gatesii*) which lies to the northward of it.

Plants of *I. Gatesii* were obtained in 1901 by the Royal Gardens, Kew, from Messrs. Wulle of Naples; they flowered in an open border near a south wall in June, 1902. The colour of the flowers is difficult of description and probably variable.

Descr.—*Rootstock* very stout, short, creeping. *Stems* two to three feet high, stout, one-flowered. *Leaves* four to five, radical, a foot to a foot and a half long, by one half to two-thirds of an inch broad, linear, acuminate, nearly flat, pale, glaucous-green, nerves faint. *Spathes* four to five inches long, pale green. *Flower* shortly pedicelled, five to seven inches broad. *Perianth-tube* short; outer segments orbicular, recurved, three inches broad, very pale rose-lilac suffused with yellow towards the disk, covered with innumerable close-set darker veins, and sprinkled with minute purplish spots, that are larger towards the base of the disk, which is furnished with long, erect, purple-brown hairs; inner segments longer and more spathulate than the outer, erect and incurved, with recurved margins, similarly striate and speckled, but of a bluer colour, and with three stout purple ribs from the base to beyond the middle of the disk. *Style* nearly two inches broad, bipartite, segments divaricate, quadrate, closely striate, with the perianth-segments acutely toothed. *Capsule* described as five inches long.—*J. D. H.*

Figs. 1 and 2, anthers:—*enlarged.*

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Tab. 7868.

ARISTOTELIA RACEMOSA.

Native of New Zealand.

Nat. Ord. Tiliaceæ.—Tribe Elæocarpeæ.

Genus Aristotelia, *L'Hér.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 239.)

Aristotelia *racemosa*; frutex v. arbuscula dioica, ramulis petiolis foliis immaturis paniculisque pubescentibus, foliis longe petiolatis oppositis suboppositisve ovatis acuminatis argute serratis basi rotundatis subcordatisve membranaceis, paniculis axillaribus oppositis et ramulos breves terminantibus breviter pedunculatis confertifloris, floribus breviter pedicellatis $\frac{1}{6}$–$\frac{1}{4}$ poll. latis, sepalis 4 oblongis, petalis late cuneatis apice obtuse 3–4-lobis roseis rarius integris, disci glandulis globosis, filamentis antheris oblongis brevioribus puberulis, ovario 3–4-loculari, stylis basi connatis, supra medium liberis gracilibus decurvis sigmoideis, baccis pisiformibus 3–4-locularibus 3–4-spermis rubris demum nigris, seminibus sub trigonoglobosis, testa dura extus carnosula.

A. racemosa, *Hook. f. Fl. N. Zel.* vol. i. p. 33; *Handb. N. Zeal. Fl.* p. 33. *T. Kirk, For. Fl. N. Zeal.* p. 223, t. 113; *Student's Fl. N. Zeal.* p. 75, *ined.*

Friesia racemosa, *A. Cunn. in Ann. Nat. Hist.* vol. iv. (1840), p. 24. *Hook. f. in Hook Ic. Pl.* t. 601.

Triphalia rubicunda, *Banks & Sol. mss. cum ic.*

Makomako *incolarum.* Wineberry, *Colonorum.*

Aristotelia is a small genus, common to Australia, New Zealand, the New Hebrides, and temperate S. America. It was founded in 1784 upon the Chilian species, *A. Macqui*, L'Hérit. (Stirp. Nov. p. 31, t. 16).

A. racemosa is one of the commonest shrubs or small trees in New Zealand, from the northern districts to Stewart's Island, chiefly in lowland districts, but ascending to two thousand feet, flowering in October and November. The late Mr. Kirk, in his admirable "Forest Flora of New Zealand," describes it as being "the first shrub to make its appearance after the forests have been cleared, especially in the southern parts of the islands," adding that, "in many parts of the colony its straight stems may be found growing by road-sides or in abandoned clearings, in a way that at once calls to mind the hazel copses of Europe." The wood is light, often figured, and used for cabinet work, as also in the manufacture of gunpowder. It has long been in cultivation at Kew, where it flowers annually in the Temperate House in May. The figure

December 1st, 1902.

here given is of a plant growing in the open air in the Isle of Wight, kindly sent by Mr. Charles Dew of Ventnor.

Descr.—A diœcious shrub or a small tree, reaching thirty feet in height, with pubescent branchlets, young leaves and panicles. *Leaves* two inches long, opposite or sub-opposite, ovate, acuminate, sharply serrate, membranous, pale green, base rounded or sub-cordate; petiole slender. *Panicles* three to five inches long, axillary and opposite, or terminating short lateral branchlets, shortly peduncled, erect, very many-flowered. *Flowers* shortly pedicelled, about a quarter of an inch in diameter. *Sepals* oblong, obtuse, green. *Petals* broadly cuneate, shortly and obtusely three- to five-lobed at the broad end, rose-red. *Disk-glands* globose. *Anthers* linear-oblong, longer than the hairy filaments. *Ovary* oblong, three- to four-celled, narrowed into a three- to four-grooved style, which divides above into as many decurved, slender, sigmoid branches. *Berry* globose, pisiform, three- to four-celled and seeded. *Seeds* globosely trigonous; testa crustaceous, with a fleshy coating.—*J. D. H.*

Fig. 1, male flower; 2, stamens and disk gland; 3, female flower (from herbarium specimen); 5, ripe fruit; 6, seed:—*all but fig.* 5 *enlarged.*

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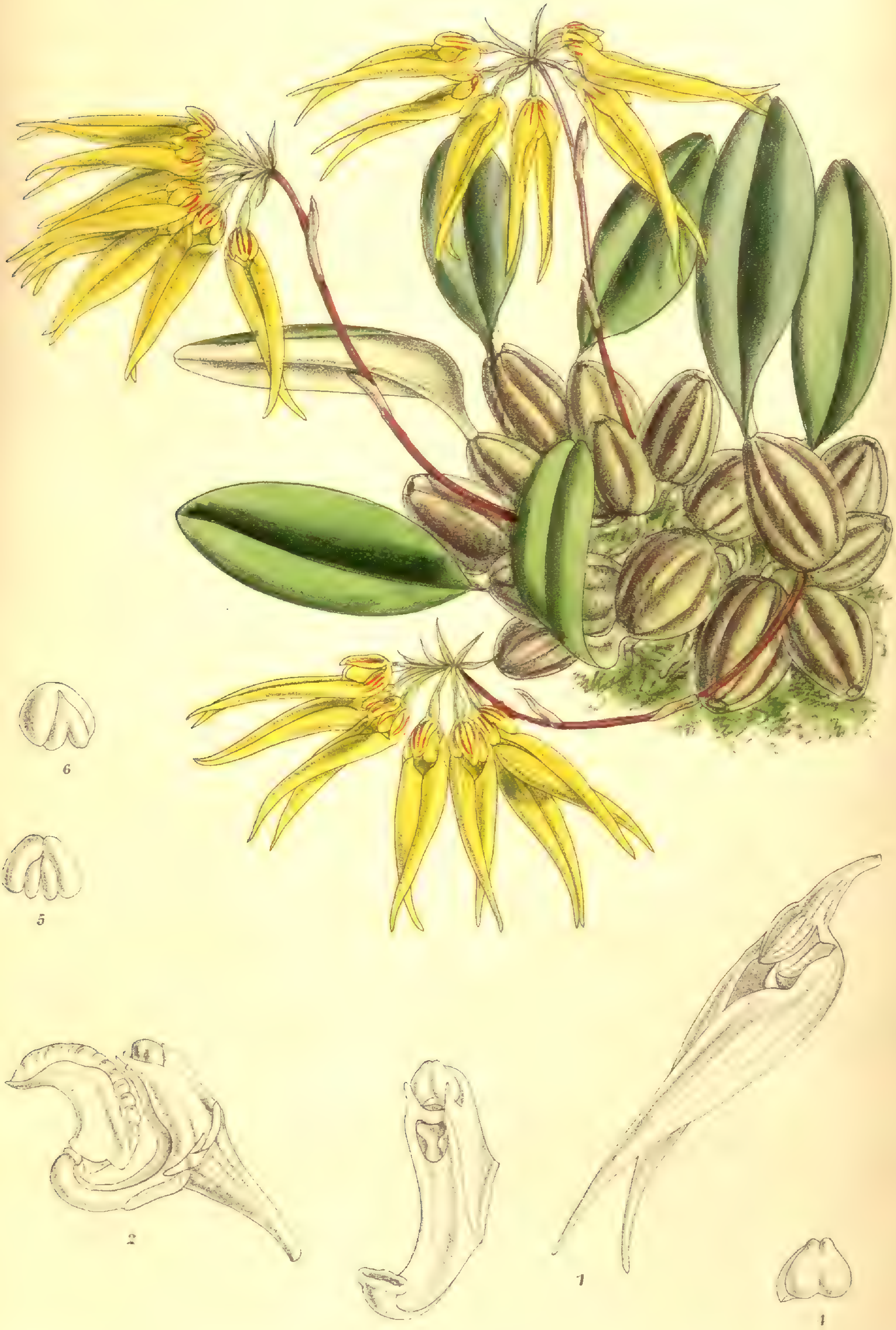

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TAB. 7869.

CIRRHOPETALUM HOOKERI.

Native of the Western Himalaya.

Nat. Ord. ORCHIDEÆ.—Tribe EPIDENDREÆ.

Genus CIRRHOPETALUM, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 504.)

CIRRHOPETALUM, *Hookeri*; pseudobulbis confertis pollicaribus ovoideis obtusis sulcatis griseo-viridibus 1-foliatis, folio bipollicari elliptico-oblongis lanceolatove apice bidentato in petiolum brevem angustato coriaceo supra saturate viridi costa impressa, pedunculo folio longiore gracillimo vaginis paucis lanceolatis instructo, umbella 6–10-flora, bracteis verticillatis ¼ poll. longis subulatis, pedicellis cum ovariis bracteis longioribus, floribus pollicaribus ochroleucis, sepalo dorsali ½-poll. longo oblongo obtuso infra medium purpureo striato, lateralibus lineari-lanceolatis acuminatis convexis basi auriculatis, petalis sepalo dorsali brevioribus ovatis apice rotundatis, labello decurvo marginibus incrassatis incurvis carnosis crenatis, columna apice bicuspidata.

C. Hookeri, *Duthie in Journ. As. Soc. Beng.* vol. lxxi. pars II. (1902) p. 38; *in Ann. Bot. Gard. Calcutt.* vol. x. *ined.*

Cirrhopetalum Hookeri is a very recent discovery, of interest as occurring in the province of Garwhal, which is further to the west in the Himalaya than the genus was supposed to reach. Two species had long been known to be natives of Kumaon, the adjoining province to the east of Garwhal, namely, *C. maculosum*, Lindl., and *C. refractum*, Zoll., and many species are found in the Eastern Himalaya. Its nearest ally is, as Mr. Duthie has pointed out, *C. cæspitosum*, Wall., a native of the Sikkim-Himalaya and the Khasia Hills, in Eastern Bengal, which differs in being of a much smaller size, and having proportionately much larger, erose, dorsal sepal and petals; the flowers are yellow in both, but much paler in *C. cæspitosum*, and showing no purple markings. This latter is, however, a variable character in *C. Hookeri*, the cultivated specimen here figured wanting the bright red veins on the lateral sepals described by Mr. Duthie in the native specimens, and figured in an unpublished plate prepared for a forthcoming volume of the "Annals of the Royal Botanic Garden of Calcutta." *C. Hookeri* was discovered by Mr. Mackinnon's collector, growing epiphytically on *Rhododendron arboreum*, at elevations of five thousand feet

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to six thousand feet. Specimens sent early in 1902 to the Royal Gardens, Kew, by Mr. Duthie, flowered in July of the same year.

Descr.—*Pseudobulbs* tufted, an inch long, ovoid, obtuse, grooved, greyish green. *Leaf* two inches long, elliptic-oblong or -lanceolate, tip bidentate, coriaceous, dark green above, with an impressed costa; base narrowed into a very short petiole. *Peduncle* very slender, longer than the leaf. *Umbel* six- to ten-flowered. *Bracts* whorled, a quarter of an inch long, subulate. *Pedicels* with the ovary longer than the bracts. *Flowers* an inch long, ochroleucous. *Dorsal sepal* a quarter of an inch long, obtuse, streaked with purple; lateral linear-lanceolate, acuminate, convex, auricled at the base. *Petals* shorter than the dorsal sepal, ovate, tip rounded. *Lip* decurved; margins thickened, fleshy, crenate. *Column* bicuspidate.—*J. D. H.*

Fig. 1, flower; 2, the same, with the sepals and petals removed; 3, column; 4, anthers; 5 and 6, pollinia:—*all enlarged.*

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Tab. 7870.

CROWEA ANGUSTIFOLIA.

Native of West Australia.

Nat. Ord. Rutaceæ.—Tribe Boronieæ.

Genus Crowea, *Sm.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 293.)

Crowea, *angustifolia*; fruticulus glaberrimus, ramulis virgatis erectis gracilibus angulatis, foliis sparsis 1–2-pollicaribus sessilibus linearibus integris dentatis subserratisve acutis acuminatisve enerviis glandulis minutis, floribus axillaribus solitariis rarius 2–3-nis, pedicellis brevibus basi minute bracteolatis, sepalis minutis rotundatis, petalis ½ poll. longis lineari-oblongis obtusis roseis v. albis, filamentis pilosulis, antheris lineari-oblongis dorso hispidulis connectivo in rostrum elongatum hispidulum erectum producto, ovario breviter stipitato glabro, stylo valido pilosulo, stigmate lobulato, coccis transverse rugosis.

C. angustifolia, *Turcz. in Bull. Soc. Nat. Mosc.* vol. xxii. (1849), p. 13. *Benth. Fl. Austral.* vol. i. p. 330.

Eriostemon Turczaninovii, *F. Muell. Pl. Vict.* vol. i. p. 120.

Crowea is a small Australian genus of four species, very closely allied to the much larger one of *Eriostemon*, from which it differs only in the much larger hairy appendage terminating the anther. It was named by Sir James Smith in compliment to James Crowe, Esq., F.L.S., of Lakenham, near Norwich, a zealous British Botanist, especially Cryptogamis, and an ardent cultivator of the Willows. He died in 1807. One species alone has hitherto been figured in this or any other work, the *C. saligna*, Andr. tab. 989.

C. angustifolia is a native of King George's Sound, where it was first collected by James Drummond. The plant figured was raised from seed sent from Albany to the Royal Gardens, Kew, in 1899 by Sergeant-Major Goadby, which flowered in the Temperate House in March of the present year.

Descr.—A slender, glabrous shrub, with erect stem and angular branches. *Leaves* scattered, one to two inches long, sessile, linear, entire toothed or sub-seriate, acute or acuminate, nerveless, studded with minute oil-glands. *Flowers* many, axillary, solitary, or two to three together, about an inch broad. *Pedicels* short, with minute bracts at the base. *Sepals* minute, orbicular. *Petals* half an

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inch long, spreading, linear-oblong, obtuse, white or rose-coloured. *Disk* annular. *Filaments* hairy, anthers linear-oblong, dorsally hispidulous, connective produced into an erect, hispid beak, one-third shorter than the cells. *Ovary* shortly stipitate, glabrous; style stout, hairy; stigma five-lobed. *Cocci* transversely rugose, truncate.—*J. D. H.*

Fig. 1, under-surface of tip of leaf; 2, flower with the petals removed; 3, 4, and 5, anthers; 6, pistil:—*all enlarged.*

7871.

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TAB. 7871.

KALANCHOE KIRKII.

Native of Nyassaland.

Nat. Ord. CRASSULACEÆ.

Genus KALANCHOE, *Adans.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 659).

KALANCHOE, *Kirkii*; caule robusto tereti laxe glanduloso-piloso simplici v. ramoso, foliis oppositis petiolatis patenti-decurvis 3–4 poll. longis ovatis oblongis v. ovato-lanceolatis obtusis crenatis carnosis utrinque pilosulis basi rotundatis, nervis utrinque 5–6, supremis angustioribus floralibus linearibus supra læte viridibus subtus pallidis, petiolo valido supra concavo, cymis trichotomis subcorymbosis, glanduloso-pubescentibus multifloris, floribus confertis sessilibus secundis, bracteis linearibus, bracteolis subulatis, sepalis $\frac{1}{4}$ poll. longis lineari-oblongis subacutis liberis glanduloso-pubescentibus, corollæ tubo $\frac{1}{3}$ poll. longo, limbi $\frac{1}{3}$–$\frac{1}{2}$ poll. diam. lobis oblongis aurantiaco-rubris, staminibus 8 v. 10 biseriatis v. 4 uniseriatis antheris inclusis, disci glandulis subulatis, carpellis 3–4 in stylos breves attenuatis, stigmatibus capitellatis.

K. Kirkii, *N.E. Br. in Gard. Chron.* 1902, vol. ii. p. 110.

K. coccinea, *Welw.* var. subsessilis, *Britt. in Oliv. Fl. Trop. Afr.* vol. ii. p. 395.

Species of *Kalanchoe* of horticultural as well as botanical interest have been introduced into cultivation of late with remarkable rapidity. Of the nine species figured in the *Botanical Magazine*, seven have been introduced within the last ten years; three from N.E. tropical Africa (Somaliland), *K. marmorata*, t. 7333, *K. flammea*, t. 7595, and *K. somaliensis*, t. 7831; one, *S. Kirkii*, from Central Africa; one from S. Africa, *K. thyrsiflora*, t. 7678, and two from Arabia and Socotra, *K. Bentii*, t. 7765, and *K. farinacea*, t. 7769.

K. Kirkii is allied to *K. crenata*, Haw. (*Cotyledon crenata*, t. 1436), a native of Sierra Leone, with which it is nearly identical in habit, foliage, calyx, and pubescence, but *K. crenata* differs in the much longer and narrower tube of the golden-yellow corolla. According to Mr. N. E. Brown, it appears to be the same as a plant discovered by Sir John Kirk, G.C.M.G., in 1858, near Shupanga, on the Zambesi River, in Portuguese E. Africa, and found afterwards in Nyassaland by Mr. Meller in 1861. The specimen here figured was raised from seed in the garden of Earl Fitzwilliam, Wentworth, Rotherham, from whom

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a cutting was received at the Royal Gardens, Kew, in 1898, which flowered freely in April, 1902.

Descr.—Whole plant more or less glandular-pubescent, with long, spreading hairs. *Stem* tall, simple or sparingly branched, stout, terete. *Leaves* opposite, spreading and decurved, oblong or ovate-lanceolate, obtuse, crenate, fleshy, slightly hairy, base rounded, upper narrower; floral linear, bright green above, paler beneath; petiole very stout, concave. *Cymes* terminal, trichotomously branched, glandular-pubescent, many-flowered; bracts linear; bracteoles subulate. *Flowers* crowded, sessile, secund. *Sepals* free, a quarter of an inch long, linear-oblong, acute, glandular-pubescent. *Corolla-tube* a third of an inch long; limb nearly half an inch broad, segments oblong, orange-red. *Stamens* eight or ten in two series, or four in one series; anthers included. *Disk-glands* subulate. *Carpels* three or four, narrowed into short styles with capitellate stigmas.—*J. D. H.*

Fig. 1, calyx; 2, octandrous and tetrandrous corollas laid open; 4, disk-glands and carpels:—*all enlarged.*

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* Mr. Rolfe has determined this to be *C. Dayanum*, Rchb. f., Gard. Chron. (1869), p. 710, a plant erroneously referred to *C. eburneum*, Lindl.